

May • 1955

Finish

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT



Florence

MODEL 48188

AUTOMATIC GAS RANGE with exclusive new FLORENCE "GOVERNESS," world's first thermostatically controlled surface burner for top-of-the-range cooking. The fine porcelain enamels on this deluxe range are made from ING-RICH FRIT.

★ Your request will bring factual production records of Ing-Rich performance on many different products, without obligating you in any way.

Performance

speaks for itself...

Fine porcelain enamels for Florence Ranges have been produced from **ING-RICH FRIT** for more than a quarter-century

When a manufacturer with long experience in porcelain enameling specifies frit from the same maker for more than 25 years, you can be sure that this frit performs smoothly in the plant . . . functions economically . . . and produces the finest enamels he knows about. He is buying, and getting, *performance!*

Ing-Rich Frit has a long record of dependable performance for leading manufacturers whose products you know and respect. Such long standing preference could be earned only by consistently good operation that produces desired results—year after year.

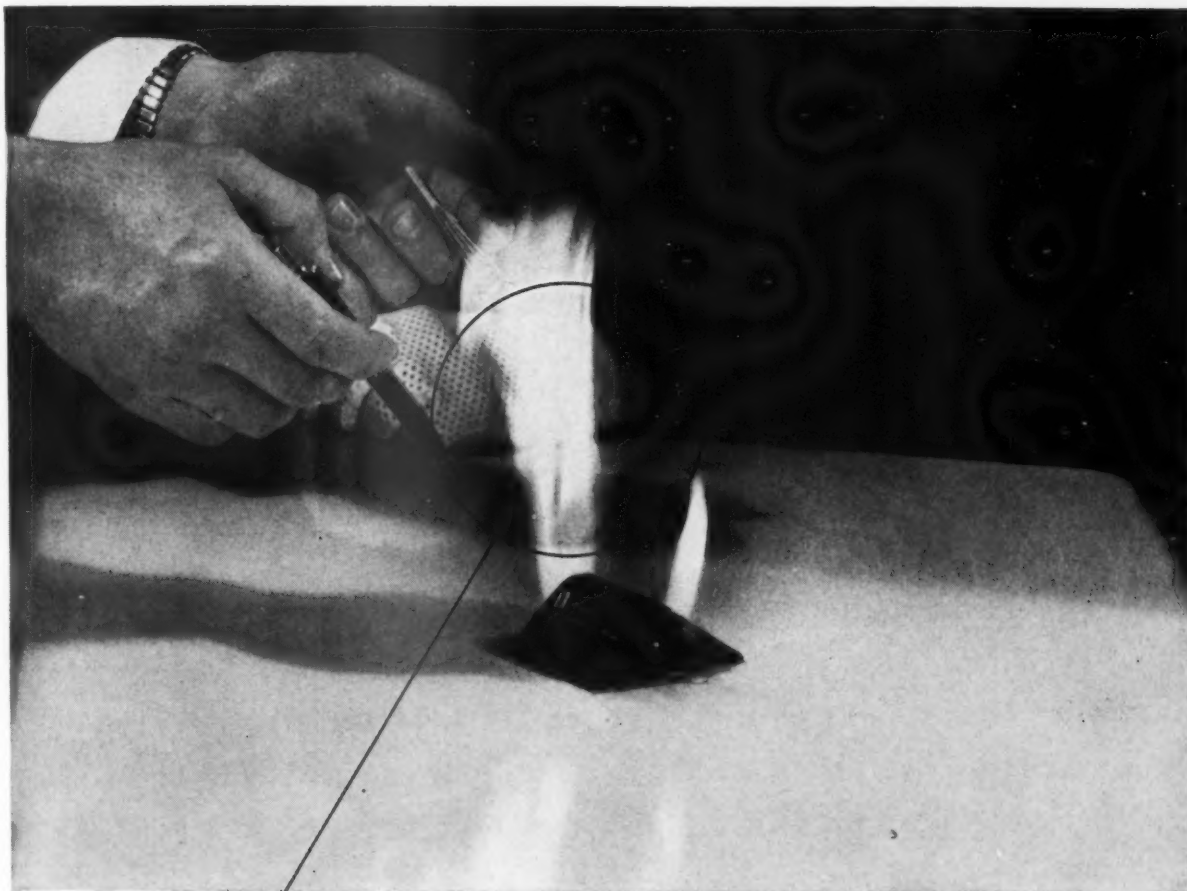
Ing-Rich performance is the Simon-pure product of "know-how" learned the hard way in more than a half-century of practical experience in both frit manufacturing and commercial porcelain enameling. Here we not only make frit, but use it in our own job enameling plant, just as our customers do. That experience pays off for every user of Ing-Rich Frit . . . in improved enameling production . . . better finishes . . . and lower cost.

If your enameling operations could stand improvement, why not talk with an Ing-Rich engineer? You'll likely find it profitable.



INGRAM-RICHARDSON, INC.

OFFICES, LABORATORY AND PLANT • FRANKFORT, INDIANA



*

This Flame Can Be a Strong Sales Point for You

A Porcelain Enameled finish offers so many unusual sales features for your products that one of its biggest advantages is often overlooked.

It can take heat. Porcelain Enamel doesn't burn, blister or discolor. Even flames won't damage the surface in any way.

Since this finish is processed at 1550 F, it will withstand any temperature it is likely to encounter in home service. Burning cigarettes or even hot electric irons don't harm its hard, glossy surface.

This is only one of many reasons why Porcelain Enamel gives you extra sales advantages. It is smooth, bright and attractive too—and so easy to keep clean.

Colors never "fade"—even after years of use. Acid-resisting Porcelain Enamel is not damaged by fruit juices or alcohol.

UNIFORM QUALITIES

Of course, the metal beneath the Porcelain Enameled surface must have excellent bonding qualities, flatness, and uniform fabricating characteristics. That's why more manufacturers have used more Armco Enameling Iron over a longer period than any other enameling base. That is why too it has become known as the "World's Standard Enameling Iron."

ARMCO STEEL CORPORATION

2924 CURTIS STREET, MIDDLETOWN, OHIO
EXPORT: THE ARMCO INTERNATIONAL CORPORATION





**New low-cost control
regulates current input ...or time cycles ...or both!**

It provides *infinite control* of electrical input, from 2% to 100% of rated load.

It provides an *automatic shutoff* after cooking, clothes drying or other operations—while maintaining predetermined current input—up to 65 minutes.

It can be used for *24-hour operation*, to start or stop any electric equipment. And, through an optional *built-in* circuit selector, it can be used optionally to control any burner on a range—or any one of *several* pieces of equipment.

Small and compact, this new Ferro Electric

Control is sturdily built for long service. It has passed all Underwriters' tests. By combining two functions in a single control, it simplifies your designing and manufacturing, gives you a much more attractive and salable product.

We've built this control (with all its variations) around *standard* parts and, as a result, have come up with big savings. Some of these we're passing on to you.

Can we tell you more about it? Please tell us the applications you have in mind, also the general specifications, when writing.



FERRO ELECTRIC PRODUCTS, INC.
A Subsidiary of Ferro Corporation
Kirkland, Illinois

May • 1955

VOL. 12 • NO. 5

finish

MONTHLY TRADE PUBLICATION

Established January 1944

Published by

DANA CHASE PUBLICATIONS

York Street at Park Avenue
Elmhurst, Illinois

Telephone • TErrace 4-5280
TErrace 4-5281

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is \$5.00 per year, domestic. To all other countries \$8.00 per year (U.S. funds).

Editor and publisher • DANA CHASE
Associate editor • MATT E. HEUERTZ
Western editor • GILBERT C. CLOSE
Editor's assistant • R. W. RICHTER
Customer service • DANA CHASE, JR.

Technical consultants
PROF. A. I. ANDREWS
PROF. R. M. KING
PROF. L. L. CARRICK
JAMES M. LEAKE
RALPH F. BISBEE

Accepted under the act of June 5, 1934, at Aurora, Illinois, authorized January 7, 1948.

COPYRIGHT 1955
DANA CHASE PUBLICATIONS
PRINTED IN U.S.A.

COLD EXTRUSION MARCHES ON

—Part I—by James Leake 27

PRODUCTION OF ROOM AIR CONDITIONERS

AT FRESH'ND-AIRE by Lewis W. Seil 31

FORMING WATER HEATER TANKS FOR ENAMELING

by George W. Landis 41

PRE-FINISHING ROOM COOLER CABINETS

..... 43

INDUSTRY RESPONSIBILITIES IN ASSURING A BRIGHT

FUTURE FOR PORCELAIN ENAMEL by Glenn A. Hutt .. 45

RCA MODEL PLATING SHOP SETS STANDARDS

FOR PRODUCTION 49

DEVELOPMENT AND EVALUATION OF AN ORANGE ENAMEL

OF IMPROVED LIGHT FASTNESS by William A. Gottfried 50

METAL STAMPERS HOLD TECHNICAL MEETING

..... 52

A REPORT ON COLOR IN THE HOME APPLIANCE FIELD

..... 57

EDISON ELECTRIC INSTITUTE SALES CONFERENCE

..... 62

ARI CONFERENCE ON AIR CONDITIONING

..... 63

PROGRAM FOR APPLIANCE TECHNICAL CONFERENCE

.. 77

FEATURES

INDUSTRY MEETINGS 6

THE FINISH SPOTLIGHT—General Electric dishwasher 15

FROM THE EDITOR'S MAIL 19

CANDID FINISHFOTOS FROM PEI WEST COAST MEETING 66

INDUSTRY NEWS AND PERSONALS 81

SUPPLIER NEWS 102

MISCELLANEOUS

NEW INDUSTRY DEVELOPMENTS 68

NEW SUPPLIES, EQUIPMENT AND LITERATURE 116

ADVERTISERS' INDEX 120

CLASSIFIED ADVERTISING 120

BPA

NBP

finish

METAL PRODUCTS MANUFACTURING
FROM RAW METAL TO FINISHED PRODUCT

LORD HALL LIBRARY

THERE'S HEAT THERE'S

FAHRALLOY

WHERE

FAHRALLOY WHERE THERE'S HEAT THERE'S FAHRALLOY

WHERE THERE'S HEAT THERE'S FAHRALLOY WHERE THERE'S HEAT THERE'S

FAHRALLOY...

**engineering experience
is yours for the asking**

For over 20 years Fahrallloy engineering experience has helped solve many stubborn problems involving burning tools for the porcelain enamel industry. These range all the way from "S" hooks to complete fixtures for firing washing machine tubs.

The point is that no matter what your burning tool problem may be . . . no matter how tough you may think it is you can have complete confidence that you'll get the right answer at Fahrallloy. Remember, too, that Fahrallloy engineering experience is something that can't be bought — but it's yours for the asking.



**FAHRALLOY BURNING TOOLS
are the No. 1 choice of the
Porcelain Enamel Industry**



THE FAHRALLOY CO.

150th & Lexington Ave. — Harvey, Illinois
In Canada — Fahrallloy Canada, Ltd., Orillia, Ontario

more and more women all over the country are requesting...

America's only Electric Timers with the exclusive Bell-Chime Signal



THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT

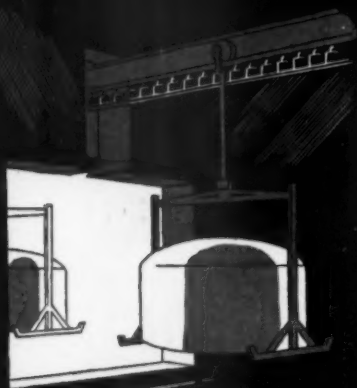
finish MAY • 1955

1920



1955

A business grown big through SERVICE.

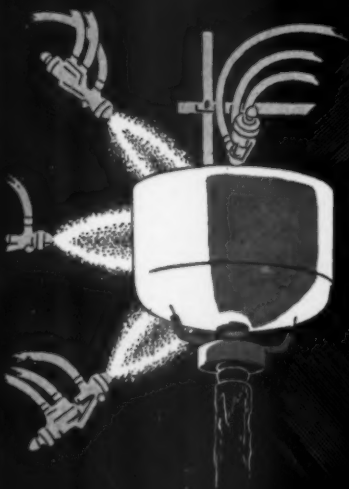


1929

Ferro builds first conveyORIZED P.E. plant with continuous furnace for washing-machine tubs.

1955

Ferro engineers cut production costs for customers with automatic spray machines (below), other equipment leading to automation.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

INDUSTRY MEETINGS

LP-GAS CONVENTION, EXHIBIT

Liquefied Petroleum Gas Association, annual convention and exhibition, Conrad Hilton Hotel, Chicago, May 1-4.

ENAMELER CLUB MEETINGS

Central District Enamellers Club, tour of Westinghouse plant, Columbus, Ohio, May 6.

Midwest Enamellers Club, annual Maypole Party, Sportsman Golf Club, Chicago, May 20.

PEI MID-YEAR CONFERENCE

Porcelain Enamel Institute, mid-year division conference, Edgewater Beach Hotel, Chicago, May 9-11.

MATERIALS HANDLING SHOW

National Materials Handling Exposition and Conference, International Amphitheatre, Chicago, May 16-20.

APPLIANCE TECHNICAL MEETING

American Institute of Electrical Engineers, annual appliance technical conference, Hollenden Hotel, Cleveland, Ohio, May 23-24.

KITCHEN CABINET MFRS. MEETING

Steel Kitchen Cabinet Manufacturers Association annual meeting, The Greenbrier, White Sulphur Springs, W. Va., June 2-4.

AIR-CONDITIONING MEETING

Air-Conditioning and Refrigeration Institute, annual meeting, The Homestead, Hot Springs, Virginia, June 5-8.

APPLIANCE INST. MEETING

Institute of Appliance Manufacturers, annual meeting and suppliers' exhibit, Netherland Plaza, Cincinnati, June 6-8.

AWS WELDING SHOW

American Welding Society, annual welding show, Municipal Auditorium, Kansas City, Mo., June 8-10.

INDUSTRIAL FINISHING SHOW

American Electroplaters' Society, annual convention and industrial finishing exposition, Public Auditorium, Cleveland, June 20-23.

SUMMER MARKET

Summer Homefurnishings and Appliance Market, The Merchandise Mart and the American Furniture Mart, Chicago, June 20-30.

ASTM ANNUAL MEETING

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N.J., June 26-July 1.

NATIONAL HOUSEWARES SHOW

National Housewares and Home Appliance Manufacturers Exhibit, Auditorium, Atlantic City, July 11-15.

HOME LAUNDRY SUMMER MEETING

American Home Laundry Manufacturers' Association, summer meeting, The Homestead, Hot Springs, Virginia, July 17-19.

ENAMELERS SHOP FORUM

Porcelain Enamel Institute, annual shop practice forum, Ohio State University, September 14-16.

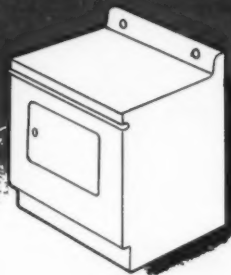
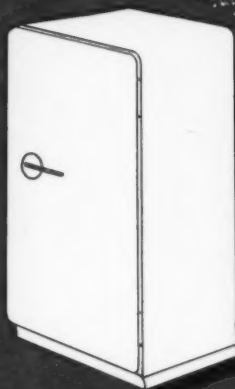
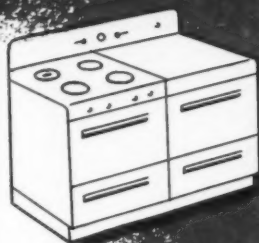
PACKAGING-HANDLING SHOW

Society of Industrial Packaging and Materials Handling Engineers, annual packaging and materials handling show, Kingsbridge Armory, New York City, September 20-22.

METALWORKING EXPOSITION

Metalworking Machinery and Equipment Exposition, The Coliseum, Chicago, September 6-16.

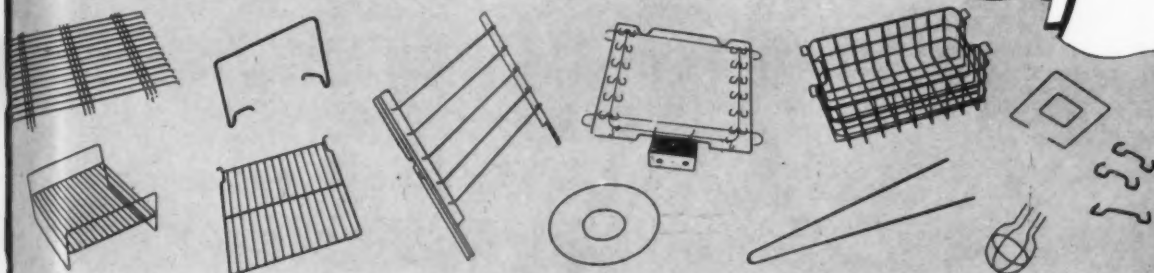
MAY • 1955 finish



there is yet no substitute for **USP** quality

So long as consumer satisfaction is to be measured in years. Your product . . . your appliance, must stand up to the rigors of continuous service while providing complete convenience, dependability as well as lasting beauty. You can't afford to compromise quality for price at any point. You can't afford to gamble on delivery dates. Why then, not choose the one best source for your welded wire components? Take advantage of Union Steel's fifty years of leadership in the design, fabrication and delivery of better, more dependable wire products.

Why not let Union Steel's engineers assist you in planning and producing a welded wire part that will make your product more efficient?

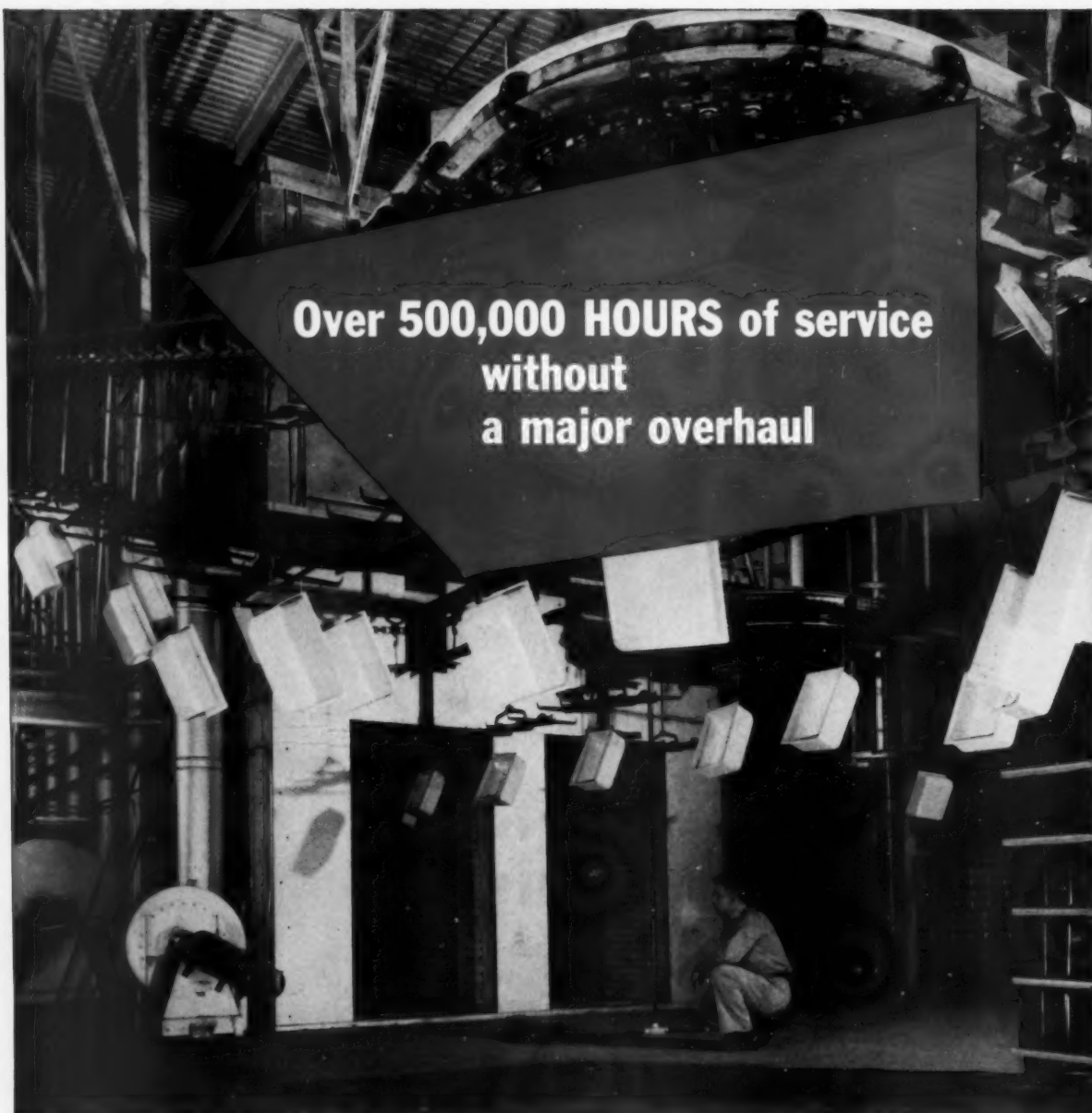


If it's made of wire . . . Union Steel will make it best! No matter how simple or complex, regardless of the finish to be applied, Union Steel's engineers, craftsmen and inspectors will guarantee the utmost in styling, dependability and lasting quality.

UNION STEEL PRODUCTS CO.

ALBION, MICHIGAN





**Over 500,000 HOURS of service
without
a major overhaul**

Ferro Porcelain-enameling furnaces have long been noted for their simplicity, high efficiency and freedom from costly maintenance. While many old furnaces have been *modernized*, relatively few have needed extensive repairs—and this goes back over a thirty-year period.

Ferro in 1954 set an all-time record for the industry to shoot at; not a single one of the

145 Ferro continuous furnaces in operation needed a major overhauling at year end (a period normally devoted to such work). They average about ten years in age and together operated well over 500,000 hours in 1954.


Naturally, we're proud of this record. And *doubly proud* of the men who designed and built such dependable, profitable-for-the-user equipment.



FERRO CORPORATION

Engineering Division

4150 E. 56th ST. • CLEVELAND 5, OHIO



Why do so many appliance
manufacturers standardize on
USS VITRENAMEL for their finest
porcelain-enameled products?

Because USS VITRENAMEL
produces finishes unusually
beautiful, durable and resistant
to chipping and scratching.

SEE The United States Steel Hour. It's a full-hour TV
program presented every other week by United States
Steel. Consult your local newspaper for time and
station.

PORCELAIN ENAMEL ON

USS Vitrenamel BASE

USS

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

**Features like these make
ELECTRIC HEAT work
most effectively in
your finishing
operation**

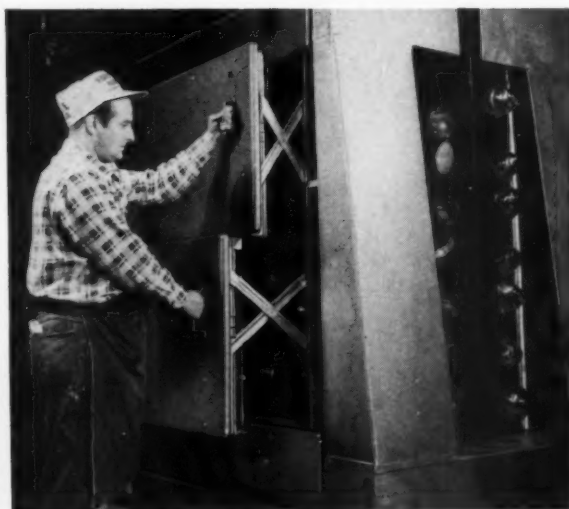


With the heater elements sealed from air and thoroughly guarded against physical damage, the heaters used in PAN-L-HEAT Ovens are virtually indestructible. The tubular heater rod is made up of three elements: a coiled wire resistor; powdered magnesium oxide insulator; and a chrome-nickel alloy sheath or casing. Under normal operating conditions, PAN-L-HEAT heaters give efficient service up to five years.

Never before so much heat, so accurately controlled, at so little cost—as with Jensen PAN-L-HEAT Ovens. Quick on-and-off heat response. Heater panels are field assembled on standardized interchangeable frame members, which also house the electric wiring. This makes later changes in size, production capacity, or heating cycle a matter of inserting or rearranging readily available standard parts.



Shown is a typical Jensen Pan-L-Heat installation. Among the many advantages of its "building block" construction is its adaptability. Whether your operation is baking, pre-heating, curing, or drying radiant energy is focused directly on the workpiece by lifetime reflectors. Uniform heat eliminates warping, distortion, etc.



Each end of every heater panel is mounted on a pair of ball-bearing pantograph arms. When the panel is in the "open" position, as illustrated above, the entire heater panel is automatically "dead". This Pan-L-Heat feature allows inspection of oven interior during actual operation and the retrieving of production pieces which might have fallen from the conveyor.

Your plant can have these construction features. In operation they give you the full benefit of maximum electric heat efficiency through increased pay load, uniform high quality production, and shorter heating cycles at lower energy consumption.

Here is a 16-page brochure to show you how electric radiant heating works. Write today.



Jensen
9351 Freeland Ave.

SPECIALTIES, INC.

Detroit 28, Mich.

When it comes to STAMPINGS

**no quantity too large
...no job too tough!**

*Steel Stamping
does it
BETTER—
Ackermann-Wheeling
does it
BEST!*

- When you have to make real volume of a difficult part, component, or product...remember, call Ackermann-Wheeling!

Here you'll find engineers, designers, production experts, ready to take your stamping problem, solve it, tool it, mass produce it, assemble it!

Every production facility is available: deep drawing, shearing, spot welding, arc welding, brazing, pressing, degreasing, painting...all this plus Ackermann-Wheeling's vast storage of experience and stamping knowledge.

So, next time you think of stamping...think of Ackermann-Wheeling. For full details on our services write, wire or call.

ACKERMANN MANUFACTURING COMPANY

WHEELING • WEST VIRGINIA



Engineered Stampings

Whatever the job...



PERMACEL 32
PLASTIC TAPE

marking or masking



PERMACEL 77
MASKING TAPE

SELF-STICKING
PERMACEL[®] TAPES

In our complete line, there's a self-sticking tape for every job . . . write Permacel Tape Corporation, New Brunswick, N. J.

a Johnson-Johnson company

"GERAMIC"

Gives You the Rainbow

New colors make a new line.

Here are the colors

you need...

matched by experts...

their purity guaranteed

by proven procedure

and rigid tests...

And future matching

is assured for we keep a

sample of every order filled.

CERAMIC COLOR & CHEMICAL MFG. CO.

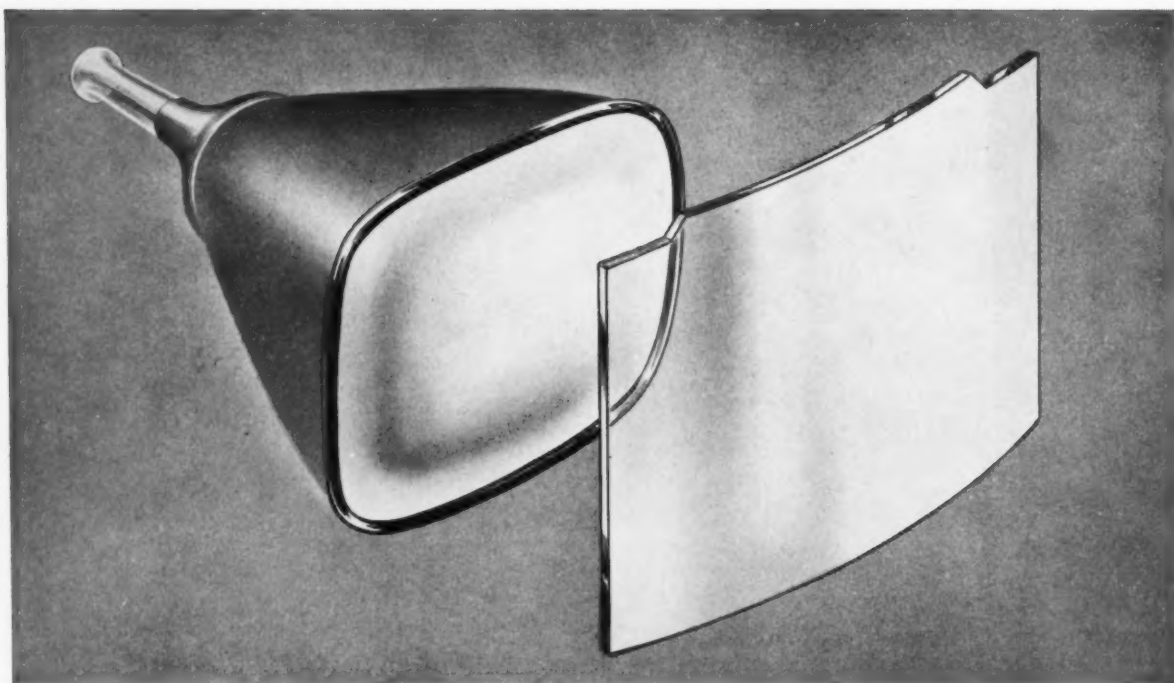
New Brighton, Pa., U.S.A.

Phone: New Brighton 500

PRODUCERS OF COLORS AND CHEMICALS



FOR POTTERY, GLASS AND PORCELAIN



MARSCO

precision glass parts

FOR UTILITY AND BEAUTY

Glass — enhances the beauty and broadens the acceptance of your product whether in the utility appliance field or the growing electronic industry.

Glass — adapted with skill and precision by MARSCO to meet your product requirements — For Today — For Tomorrow.

Glass — flat as can be — precisely shaped to fit.

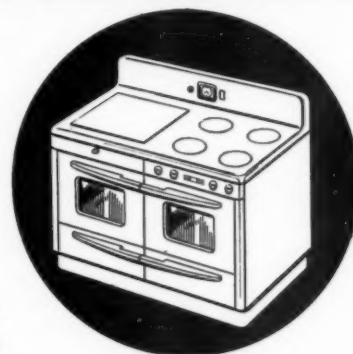
Glass — bent—convex—drilled—to the most exacting tolerance.

Glass — hardened, heat-treated or tempered to survive your consumer usage unscathed.

Join the major appliance manufacturers now enjoying extra sales from the appeal and prestige contributed thru the luster of glass — MARSCO'S Crystal Clear Glass.

Our engineers are experienced in incorporating glass as viewing windows in domestic appliances and television cabinets.

A simple request to us solves your problem.



Bent Glass



Convex Glass



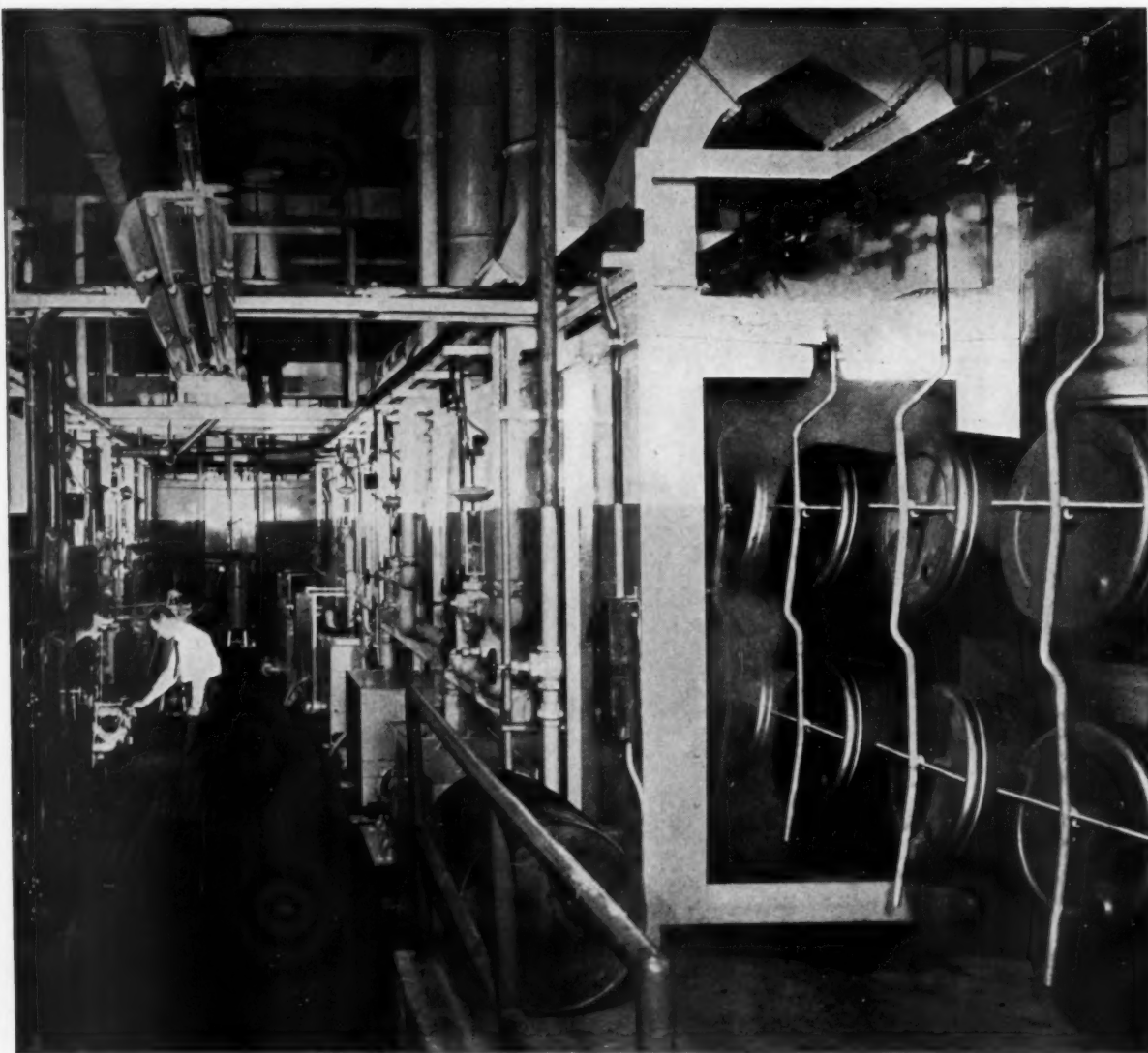
Heat-treated Glass

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

THE *finish* *spotlight*



This mobile electric dishwasher, made by General Electric, acts as an automatic servant, doing the work of pre-rinsing, washing and drying the dishes, pots, pans and mixing bowls. A special connector at the end of a double hose provides a quick connection to any faucet for the Mobile Maid unit which can be rolled around the kitchen like a serving cart to pick up dirty dishes and to store clean ones.



SPRUCE UP YOUR SPRAY LINE!

Two new Pennsalt Cleaners put new life into your old spray washers

Your elaborate spray washing machines are no better than the quality work they produce in the shortest time, with the fewest re-runs. By selecting the proper Pennsalt cleaners you can increase the efficiency of your spray wash operation, put more profits in your pocket. Here are two new Pennsalt cleaners with distinct advantages.

PENNSALT CLEANER 38—a heavy duty spray cleaner for strong detergent action and trouble-free operation. Pennsalt Cleaner 38 has excellent hard water resistance, good rinseability, exceptional detergency! Users tell us Cleaner 38

"sets a new standard of cleanliness."

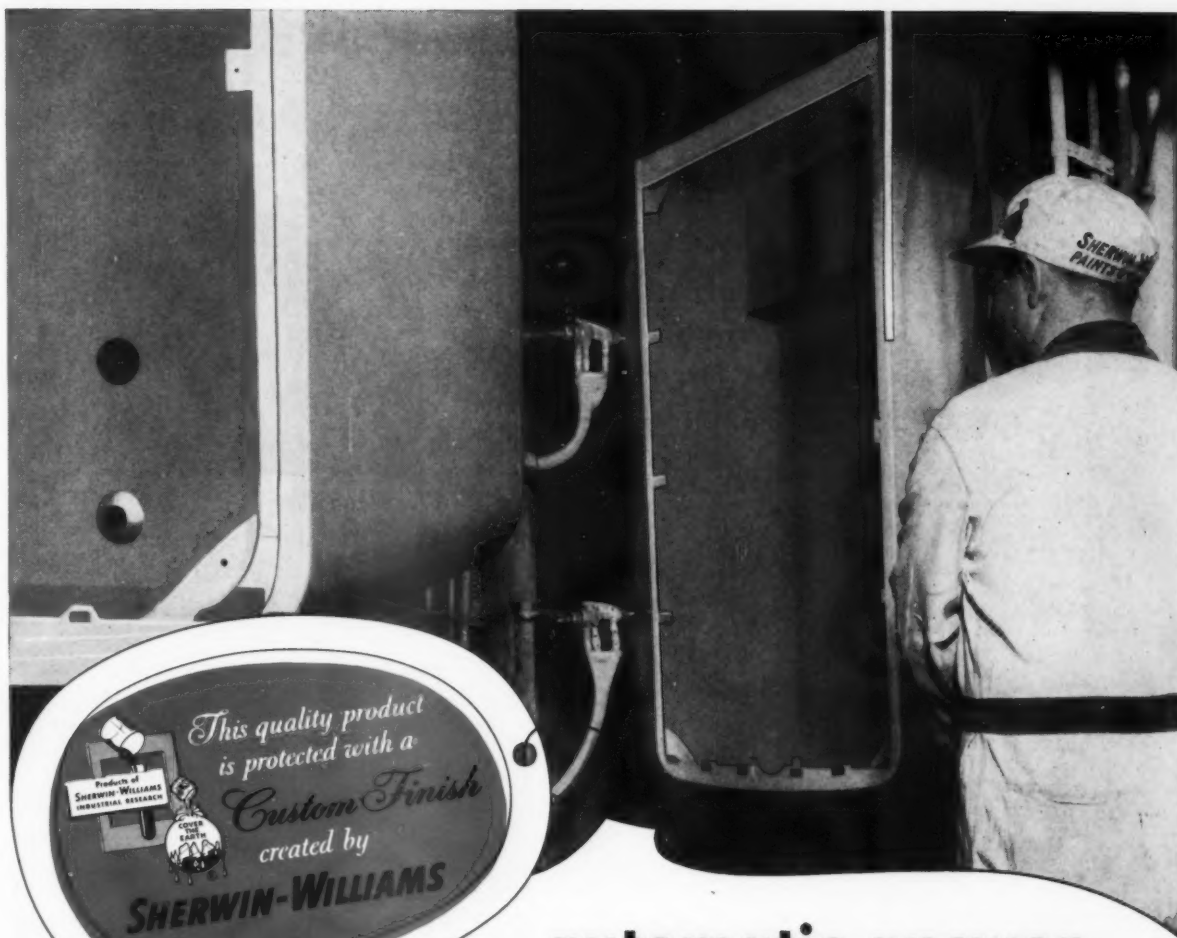
PENNSALT CLEANER EC-54—an emulsion cleaner which will not boil off, evaporate, or flash at *high use temperatures* between 160 and 200° F. Pennsalt Cleaner EC-54 removes really tough soils from hard-to-clean parts. Non-ferrous metals are cleaned without tarnishing—one cleaning unit can be used to process *all* metals. EC-54 also provides *rust inhibition*. Ferrous parts are protected against in-plant rusting for 1 to 6 weeks.

You can learn all about these new, superior cleaners from your Pennsalt specialist in metal cleaning chemicals.

Call him now—or write to us for specific recommendations. Metal Processing Dept., Pennsylvania Salt Manufacturing Company, EAST: 1014 Widener Bldg., Philadelphia 7, Pa. WEST: Woolsey Bldg., 2168 Shattuck Ave., Berkeley 4, Calif.



A BETTER START FOR YOUR FINISH



automatic answer for long-life beauty at **Gibson**

Automatic spray, electrostatically applied, insures a finish on Gibson Refrigerators as uniform as modern equipment can make it. Sherwin-Williams KEMCLAD®, the tough, modern, highly resistant, appliance white enamel, insures long-lasting beauty for Gibson Refrigerators just as automatically.

Whether it's a question of automatic or manual spray finishing of white or colored appliances, prefinishing of strip or sheet stock, production finishing of parts, or "glamour" finishes for specialty products, you'll find Sherwin-Williams technical help equally available and valuable. Investigate what KEMCLAD or other equally outstanding products can do for you. Call your Sherwin-Williams representative, or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

(In Canada: 2875 Centre Street, Montreal)



GIBSON KNOWS double protection of KEMCLAD Primer and KEMCLAD Enamel—each separately baked—gives Gibson Refrigerators exceptional resistance against foods, chemicals and detergents as well as against marring or chipping.



SHERWIN-WILLIAMS
Industrial Finishes



Why Lose Out to Competition?

Read this

BURDETT *"Radiant Heat"* **SYSTEMS' STORY**

Compare these figures

—of Mills Industries of Chicago — system including Burdett Bonderizing Unit, Dry-Off Oven, Prime Coat Oven and Finish Coat Oven. Presently, at partial capacity, production is 16,000 pounds per 8 hour day at an average fuel cost of approximately \$1.00 per hour per oven.

Think what this means competitively

Production ranges from small parts carried on trays to large 6'6" x 30" x 30" frame and cabinets of bottle dispenser cases and other types of dispensing units.

Average bake cycle is 15 minutes at 325° F.

Colors include the spectrum in both wrinkle finishes and enamels.

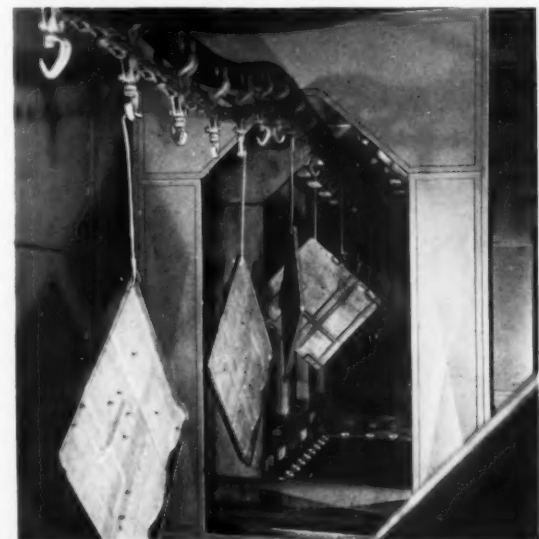
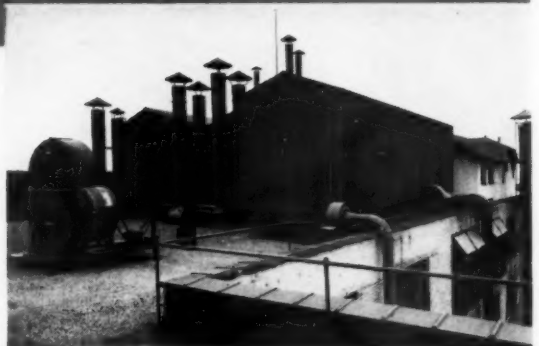
Chances are

—that without a Burdett "Radiant Heat" System you are at a decided competitive disadvantage in this phase of your production.

There is no obligation

—for recommendations. See results on your own type of work here at our plant, in our test ovens. Hear the whole story and meet competition on even ground.

We invite your inquiry



BURDETT

MANUFACTURING COMPANY

3401 West Madison Street, Chicago 24, Illinois

Detroit Philadelphia New York Cleveland Dallas

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS", OVENS, HEATERS,
AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS



from the Editor's Mail

"sparking" worthwhile ideas

Gentlemen:

I would like to request a subscription to *finish* magazine on behalf of The Pedlar People Limited.

In my former position as Engineering Supervisor for Renfrew Electric & Refrigerator Co., Ltd., I received your publication each month with great interest.

It has "sparked" many a worthwhile idea from its contents. The feature articles, I feel, are actually of more benefit than the average plant visit, and there is no better way I know of keeping abreast of developments in the sheet metal industry than to study your splendid periodical *finish*.

Donald K. Stiles
Asst. Factory Manager
The Pedlar People Limited
Oshawa, Canada

the upper echelon

Gentlemen:

In reviewing the last two issues of *finish* magazine, it again brought to our attention the excellent job that you always do with your book. Have been looking at the story on Packard and once again it is tremendous the thoroughness in which you tell your story.

Just in passing, would like to say in the past few weeks have spent considerable time in our customers' plants and have noted that *finish* magazine is displayed quite prominently, particularly in the offices of the upper echelon executives.

It would indicate to me that prestige is as prestige does.

G. R. Colkins
Vice President — Director of Sales
Soreng Products Corporation
Schiller Park, Illinois

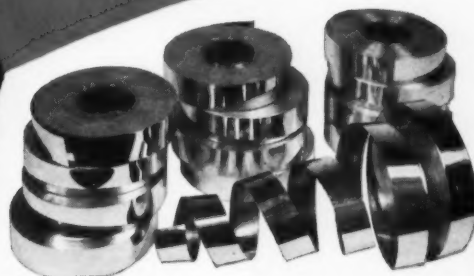
a checking list

Gentlemen:

Could you send us a list of the larger manufacturers of home laundry equipment in the United States. We are subscribers to your publication
to next page →

finish MAY • 1955

NICKELOID METALS



look good from any angle

Whether you're angling for a new product design, re-designing an established product, or casting for fresh design ideas for a functional part or decorative trim . . . take a good look at Nickeloid pre-plated Metals. Reflected in their gleaming, durable finishes of chrome, nickel, copper and brass you will find a whole new realm of exciting design possibilities. You will find, too, many design success stories which resulted when Nickeloid Metals were considered in the *pre-design* stage, to take *full* advantage of their versatility and their lower production cost.



DESIGN



PRODUCTION



SALES



Free Booklet — 24 pages of illustrations and data covering properties, uses and fabrication techniques for Nickeloid Metals. Get yours today!

Sales Offices in Most Principal Cities

NICKELOID METALS

SINCE 1900



AMERICAN
NICKELOID
COMPANY
PERU 11, ILLINOIS

1920



1955

A business grown big through SERVICE



1933

Ferro is joint-sponsor of first All Porcelain Enamel House, at Chicago's World Fair.

1955

Ferro continues to promote P. E. for construction purposes, will sponsor a big Architectural Competition this fall.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

cation, finish, and we feel that, with your connections, you may have this information readily available.

Our managing director, Mr. K. A. Lavis, will be visiting the United States shortly, and he is particularly interested in home laundry equipment.

J. G. Pruymboom
Works Manager
United Metal Industries Ltd.
Brisbane, Australia

The list of home laundry manufacturers is on the way. — Eds.

appliance industry coverage

Gentlemen:

Looking through the last issue of *finish*, I couldn't help but realize that the magazine is getting larger and larger with every issue. You are certainly doing a good job in covering appliance manufacturers, and I find the magazine very interesting and look forward to receiving my copy each month.

P. H. Korrell
Executive Vice President
Appliance Manufacturing Co., Inc.
Van Buren, Indiana

reader interest

Gentlemen:

You might be interested to know that your publication is read by people visiting our plant in all capacities—salesmen, executives of other companies, etc. All who read it say it is one of the finest publications they have read.

M. M. Rider
Purchasing Agent
Oran Company
Columbus, Ohio

from a man "who owns one"

Gentlemen:

In my former association with Worthington Corporation, I must say that I immensely enjoyed my monthly issue of your magazine, and benefited greatly by the time spent in reading same, particularly in connection with air conditioning and refrigeration work.

Now that I have become interested in a Packard retail agency, and, incidentally, one of the oldest in the county, I would very much appreciate receiving a half dozen copies of the special Packard section in your February 1955 issue.

Harry T. Fehn
General Manager
T. B. McGuire, Inc.
Ridgewood, New Jersey

1920



1955

A business grown big through SERVICE

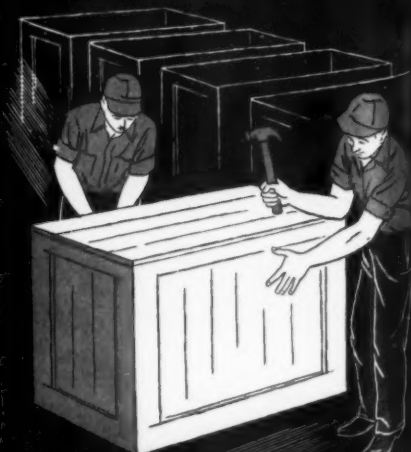


1935

Ferro builds plant in Brazil, soon followed by plants in Argentina and Australia.

1955

Industrial development of Latin America and Australasia improving living standards, helps nations' economies.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

aluminum

WOOD SCREWS

In All Standard Sizes

PHILLIPS or SLOTTED

FLAT ROUND OVAL

Corrosion Resistant • Lasting Beauty

Packed for Protection.

Shipped in indestructible cans with sealed locking tops.

Lubricated Free.

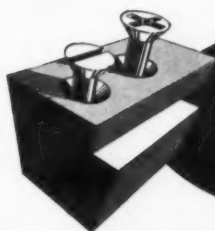
Southern Screws in bulk. Lubricated free upon request.

Shipped Promptly.

"Special" screws may be standard in the 600,000,000 steel, brass, silicon bronze, aluminum, and stainless steel screws waiting at Southern.

Write for free samples and stock list. Box 1360-F2

WOOD SCREWS • STOVE BOLTS
A & B TAPPING SCREWS • MACHINE SCREWS
CARRIAGE BOLTS • HANGER BOLTS

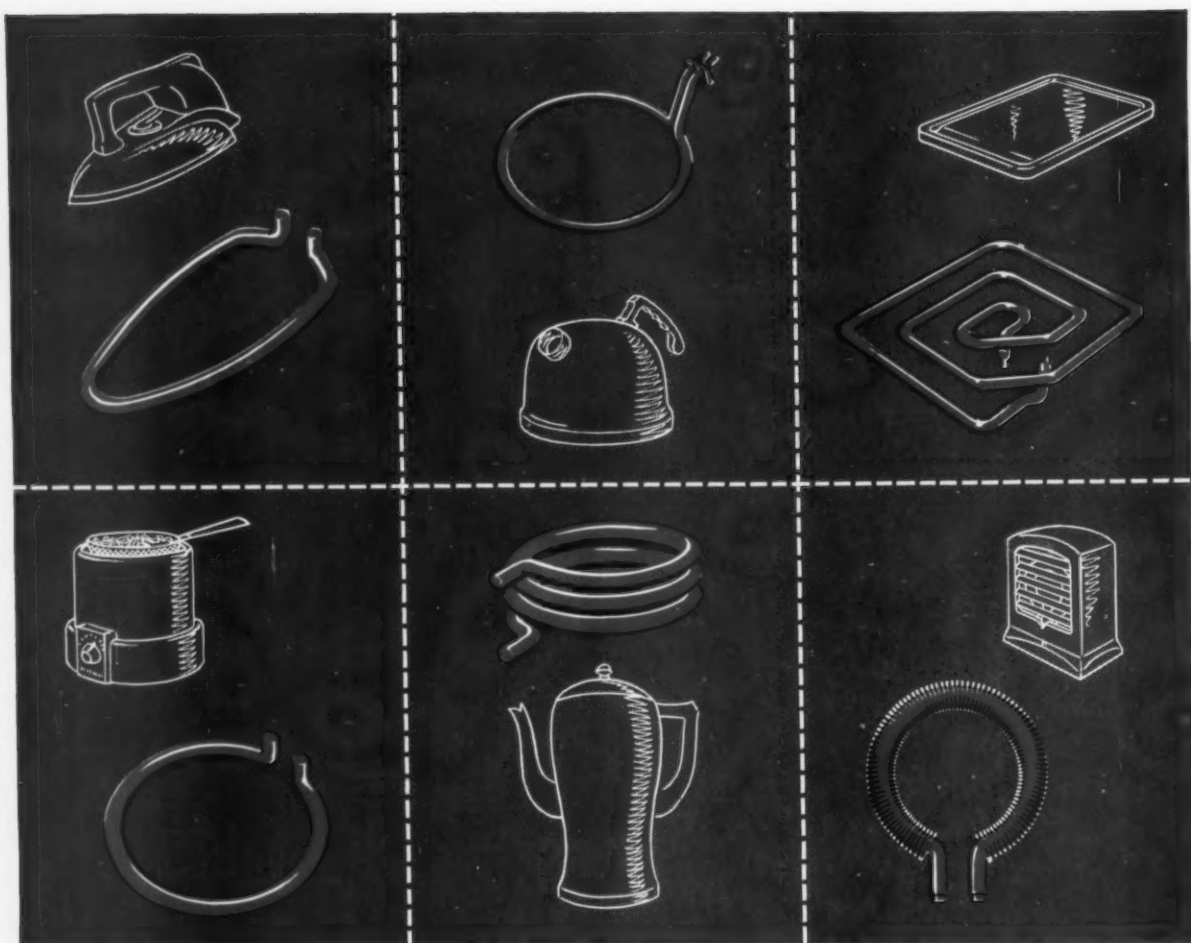


Southern
SCREW COMPANY
STATESVILLE • NORTH CAROLINA

FACTORY WAREHOUSES: NEW YORK • CHICAGO • DALLAS • LOS ANGELES

finish MAY • 1955

21



Try these for size . . . and cost!

In the manufacture of small heating appliances, *compactness* is a virtue—and often *almost a must* for designers.

Ferrod has done something about this—to help you save space in your appliances and equipment. Not only in designing the elements, but in production facilities that save you money while assuring the quality of product needed for long, customer-satisfying service.

Here at Ferrod we have but one business—the designing and building of *sheathed* electrical heaters. And we've learned some tricks you can use in *your business*—or at least can take advantage of in developing new products.

On your present products, too, you may find it *good business* to do business with Ferrod. You have nothing to lose and a lot to gain. Why not write today and tell us about your requirements?



FERROD ROD-TYPE HEATERS

FERROD MFG. CO. (Subsidiary of Ferro Corp.)

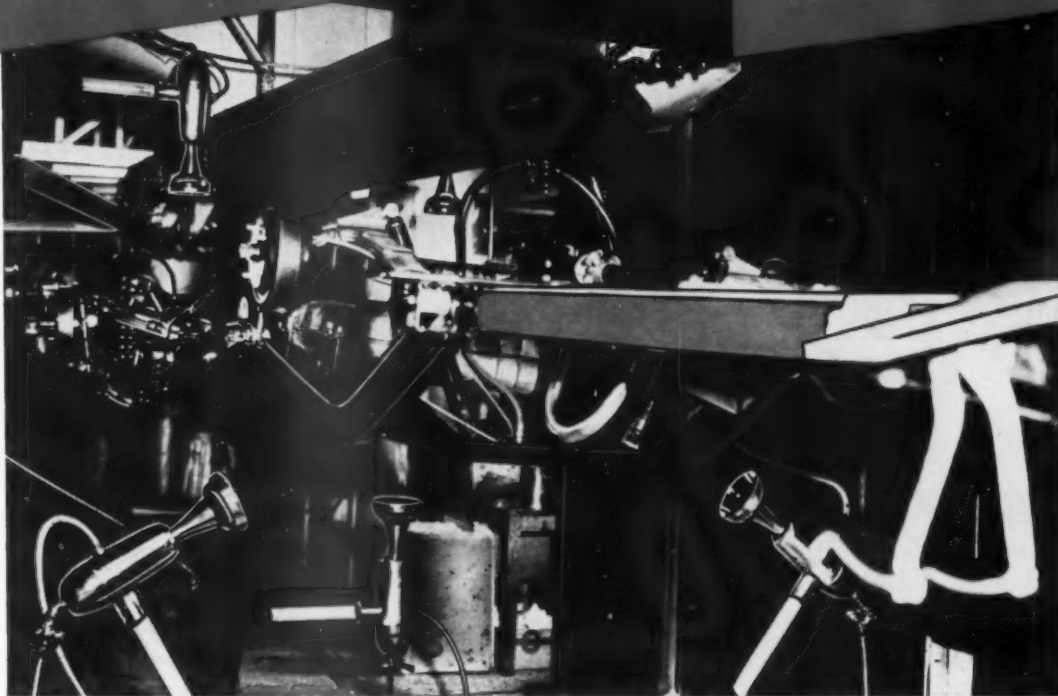
609 NORTH RIVER STREET • BATAVIA, ILLINOIS

**9 TIMES MORE
PAINT MILEAGE
ON AUTOMOBILE
CHASSIS!**

STUDEBAKER

gets a better, more uniform,
paint job on chassis as produc-
tion is increased and finishing
costs are cut substantially with

**RANSBURG
NO. 2 PROCESS
Electrostatic
Spray Painting***



● When Studebaker Division, Studebaker-Packard Corporation switched to Ransburg No. 2 Process of Electrostatic Spray painting on their automobile chassis, paint mileage was increased 9 times.

By simply putting the paint where it's supposed to go, Studebaker cut daily paint consumption on the chassis production line from 14 1/2 drums to 1 1/2 drums. And, still they are painting 6 more chassis per hour with the No. 2 Process.

* Studebaker also uses the Ransburg method to apply a heavier and more uniform primer surfacer on automobile bodies.

In addition to getting better, more uniform coverage with the asphalt-type coating, paint and labor costs were cut 70¢ per chassis. In eliminating the former set-up with 2 water wash booths and 12 automatic spray guns, they save nearly 1000 square feet of badly needed floor space.

Another on-the-job-example of the unmatched efficiency of the Ransburg No. 2 Process in which quality of the work is improved . . . AT LESS COST!

Whatever your product—large or small—if your production justifies conveyORIZED painting, it's possible that one of the Ransburg electrostatic processes can do the job better, with substantial savings to you. We'll be glad to tell you about complete Ransburg services.

Ransburg

ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

For further information about Electrostatic Painting Processes, write Dept. F

it's as easy as this...

FOR

CROSLEY

PERMA-VIEW

*the window
you can see through
always!*

*"out of our carton —
into your door"*



Yes sir, it's as easy as this. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range — to add a sales feature second to none.

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "non-fog" window meets the constantly growing demand for "visible baking."

More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to your range. Write or phone for complete information.

Phone Market 4-2256

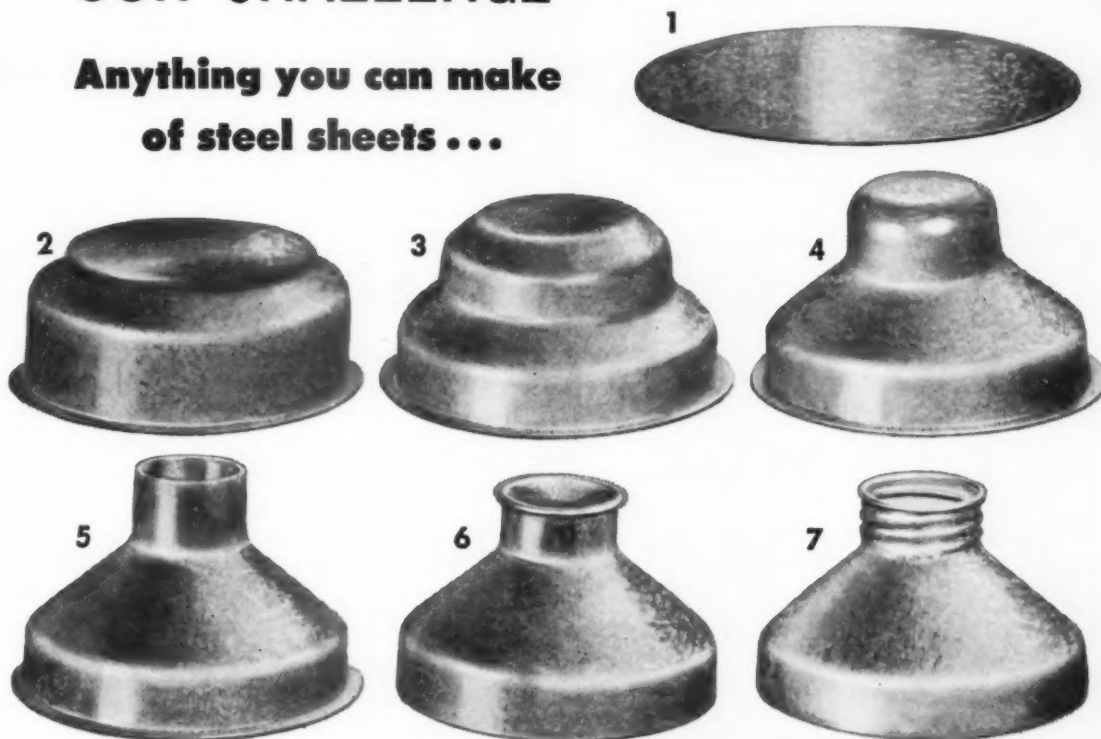
● The new Crosley range is equipped with a PERMA-VIEW window.

MILLS PRODUCTS, INCORPORATED

1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN

OUR CHALLENGE

**Anything you can make
of steel sheets ...**



— you can make of ...



...with the tightest zinc coating yet produced!

Here is a galvanized sheet with a tighter bond — tighter than any sheet yet produced. Manufactured by a new continuous galvanizing process, Wheeling SOFTITE is vastly more ductile, more workable. Wheeling SOFTITE enables you to perform the most difficult operations without the coating chipping, cracking, peeling or flaking!

This sprinkling can head, for instance, had to be electro-plated after fabrication. Now, using

Wheeling SOFTITE, electro-plating is eliminated. SOFTITE's zinc coating remains smooth and unbroken even after these severe drawing operations.

If you've been having difficulty using customary galvanized sheets, try Wheeling SOFTITE. So many users have called it the best galvanized sheet yet produced that Wheeling is tripling its production facilities in 1955. Wheeling Steel Corporation, Wheeling, West Virginia.

IT'S WHEELING STEEL



DISTRICT SALES OFFICES — Atlanta Boston Buffalo Chicago Cincinnati Cleveland
Detroit Houston New York Philadelphia St. Louis San Francisco Wheeling



●YOU PLATE METAL
 ●YOU PAINT METAL
 ●YOU WELD ALUMINUM
 ●YOU STRIP ORGANIC FINISHES

IF

NORTHWEST'S CHEMICALS DO IT BETTER!

Remember — YOUR
COST PER FINISHED
ARTICLE IS THE TRUE
COST OF YOUR CLEANER

Northwest's years of research in formulating and perfecting analytically correct, job-adjusted cleaners are your assurance of the right chemical for your job.

Northwest's Metal Cleaning Specialists have at their command such outstanding processes as LO HI pH — for cleaning prior to plating, painting or vitreous enameling; ALKALUME — for preparing aluminum for finishing and spot welding; INTERLOX — for phosphate coating; SPRA-LUBE — to control overspray of "todays" paints in water-wash paint booths; PAINT STRIPPERS — specific to your needs; SUPER-DRAW AND FLUID FILM — for drawing metals.

Northwest's production-tested chemicals and "Right the First Time" recommendations will save you money. Your Northwest Cleaning Specialist is as close as your phone.



NORTHWEST CHEMICAL CO.

9310 ROSELAWN

DETROIT 4, MICH.

contact in pH planning control

serving you since '32



Cold extrusion marches on

Part I—a review of the history of cold forming of metal plus a technical description of the various phases of the process

by *James M. Leake* • PRESIDENT, THE LEAKE STAMPING COMPANY, MONROE, MICHIGAN; AND TECHNICAL CONSULTANT TO FINISH

EXTRUSION of metal in one form or another made its appearance about the same time as stampings. In its beginning only soft metals were extruded. It was by this process that lead slugs were instantaneously transformed into uniform cross section collapsible dispensing tubes.

Early in this century, cartridge cases were made from brass blanks that had been first pressure extruded into cup shapes. For more than 30 years, aluminum and zinc have been commercially extruded into tubular products. The first extrusion of steel in punch presses was processed while hot.

But the momentum of real progress was not experienced until Germany started to build its war machine and conduct the second World War. Non-ferrous metals were too scarce for any consideration in the tremendous quantities required, and even steel had to be used most sparingly.

The introduction of a phosphate coating as a vehicle for retaining non-metallic lubricants was the key that unlocked the hidden possibilities of cold compression forming of steel. This process of technical development advanced under utmost secrecy and was not made available to American industry until after V-E Day.

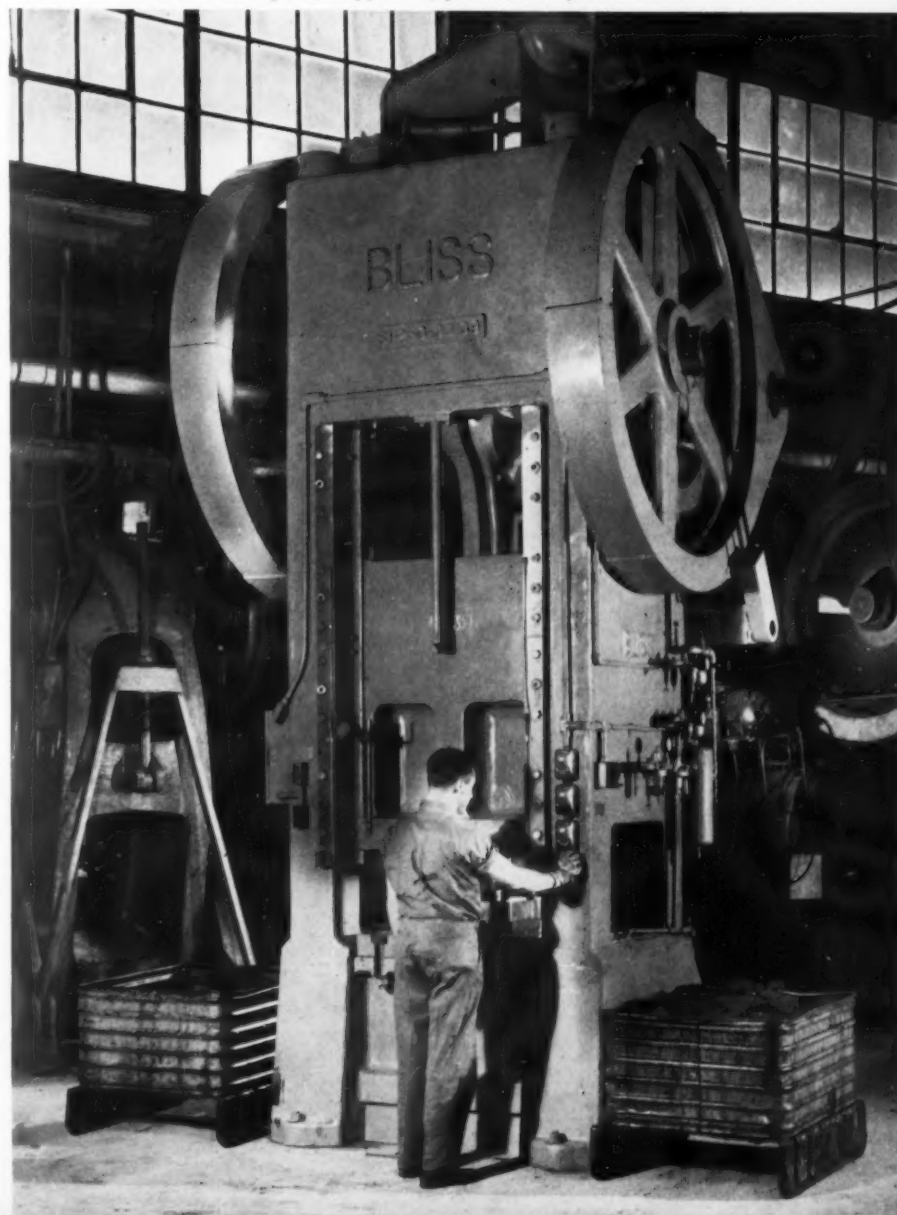
America still had a war on its hands requiring a large munitions program. Then most of our shell casings were made from blanks cut from plate material. This method was considered too wasteful of a material that was becoming in short supply and new methods had to be found.

This scarcity of steel made the German method of sawing slugs from

round steel bars look most attractive. After on-the-spot investigations of their methods, American firms imported German technicians and equipment. This cold forming process de-

veloped rapidly, first in munitions and later in commercial products, until present day methods bear little semblance to the ideas that were introduced less than ten years ago.

This 250-ton press is typical of presses used for cold extrusion work.



James M. Leake

president of The Leake Stamping Company and The Leake Engineering Company, both of Monroe, Michigan — has been active in affairs of the Pressed Metal Institute for many years. He was formerly a director and vice president of the Institute, and has served as chairman of the Toledo District. He has appeared as a speaker at several of the PMI Spring Technical Meetings, and is currently a member of the PMI Technical Research and Standards Committee. Some of his outstanding work is reported in connection with the conversion of parts from other methods to stampings. His current lecture engagements include the "Metal Processing Conference", sponsored by the Mechanical Engineering Department of the University of Tennessee, the East Tennessee Section of the American Society of Mechanical Engineers, and the Knoxville-Oak Ridge and Atlanta Chapters of the American Society of Tool Engineers. Mr. Leake is technical consultant for *finish* on subjects pertaining to tooling and fabrication.

Description

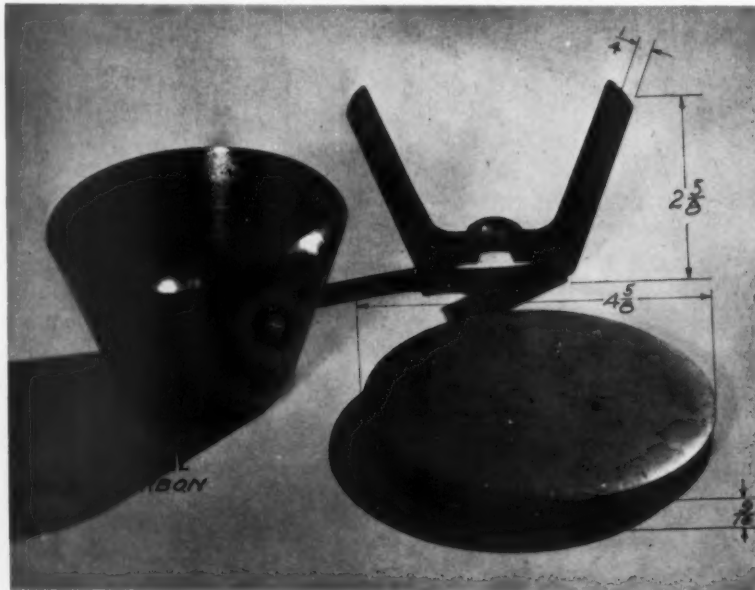
Many of those who are best qualified to judge, think that "*cold forming*" more appropriately describes the process under discussion, but are not adverse to capitalizing on the glamour built around those mystifying words, "*cold extrusion*."

Cold extrusion is that phase of compression forming in which cold metal is forced to flow plastically under pressure into convenient adjacent die cavities, wherein it becomes reoriented within the confines of its new surroundings. It is a process that has but little in common with drawing operations in which metal

travels under tension.

Parts formed under pressure from all directions withstand greater deformation without rupture than when drawn under tension. The direction in which the metal flows under pressure associates it with the phase of cold extrusion that is involved. *Forward extrusion* describes the displacement of metal that flows in the same direction as the punch that applies the pressure. *Backward extrusion* delineates the flow of metal in a direction that is opposite to the travel of the punch supplying the pressure. Sometimes a part is produced by a combination of these methods.

This coined cup is an example of extrusion of a die cut blank. The material being over .30 carbon required spheroidize annealing.



Then too there is the *opposite backward extrusion*, as used for producing such parts as wrist pins, which required punch travel in opposite directions in the same die.

Dies used for cold extrusion operations also may be placed into two different classifications. A *closed die* is one that completely confines the metal within the cavity of the die. This promotes the flow of metal into the more remote recesses of the die cavity. Pressures build up very fast when the cubical content of the metal exceeds the cavity into which it must flow. An *open die* does not enclose the part in its entirety, thus providing an escape for any excess of material.

The *amount of reduction* that a part will withstand in each operation can only be projected in advance, if every factor having a bearing on the results is considered. Here again, these reductions are in two classes. On the one hand we speak of the *percentage of reduction of the cross-sectional area* that is accomplished in the operation. Likewise another common denominator is the *percentage of reduction in the thickness of the starting slug or the bottom of the part* during the course of any given operation.

Development

Many American firms are pioneering cold extrusion independently of each other, following original approaches, adopting methods found to be most successful in their own individual operations. For this reason it would be presumptuous for one to infer that he possesses all of the answers regarding cold extrusions. Some of the current practices may even remain a top secret for some time to come.

However, the known progress of cold extrusion may be attributed to many different factors. Presses had to be designed and built to harness and expend the abnormal pressures required. Die steels had to be developed that would withstand the increasing work-hardened physicals that characterize all cold extruded parts. Dies had to be constructed to withstand extreme pressure without yielding.

to Page 74 →

PIN POINTED FOR SERVICE



Youngstown has 28 district sales offices conveniently located throughout the nation to serve you quickly. They are staffed with men who know the steel business thoroughly and are qualified to help you with your steel requirements. You can get quick service whether you write, wire or phone your nearby Youngstown District Sales Office.



DISTRICT SALES OFFICES

Atlanta 1, Ga. 1310 Healey Building Phone Walnut 5920	Dallas 2, Texas 1602 First Nat'l. Bank Bldg. Phone Randolph 6964	Kansas City 6, Mo. 1222 Commerce Bldg. Phone Victor 5837	Pittsburgh 22, Pa. Two Gateway Center Phone Atlantic 1-2350
Boston 16, Mass. 250 Stuart Street Phone Liberty 2-5855	Denver 2, Colorado 814 Continental Oil Bldg. Phone Main 3-2283	Los Angeles 15, Calif. (Direct communications to Y.S.P. of Calif.) Phone Prospect 7581	St. Louis 3, Mo. 611 Shell Bldg. Phone Geneva 1223
Buffalo 2, N. Y. 1508 Liberty Bank Bldg. Phone Washington 6270	Des Moines 9, Iowa 437 Insurance Exchange Bldg. Phone 3-5033	Milwaukee 3, Wisc. 2110 Wisconsin Tower Phone Marquette 8-5148	San Francisco 5, Calif. 55 New Montgomery Street Phone Garfield 1-6544
Chicago 2, Illinois 111 W. Washington Street Phone Franklin 2-5470	Detroit 2, Michigan 926 Fisher Bldg. Phone Trinity 5-5816	Minneapolis 2, Minn. 1050 Baker Bldg. Phone Atlantic 2970	Seattle 4, Washington 457 Central Bldg. Phone Main 6420
Cincinnati 2, Ohio 1302 Carew Tower Phone Main 1424	Grand Rapids 2, Michigan 603 Michigan Nat'l. Bank Bldg. Phone 9-4291	New Orleans 12, La. 520 Whitney Bldg. Phone Raymond 0153	Tulsa 3, Oklahoma 1305 Philtower Bldg. Phone 54-4634
Cleveland 13, Ohio 2400 Terminal Tower Bldg. Phone Main 2605	Houston 2, Texas 1350 Esperson Bldg. Phone Fairfax 1325	New York 36, New York 500 Fifth Avenue Phone Lackawanna 4-4340	Washington 5, D.C. 327 Bowen Building Phone Rep. 7-2340
Columbus 15, Ohio 2850 LeVeque Lincoln Tower Phone Capitol 4-7211	Indianapolis 4, Indiana 520 Circle Tower Phone Melrose 2-3461	Philadelphia 2, Pa. 1502 Girard Trust Bldg. Phone Rittenhouse 6-9830	Youngstown 1, Ohio 505 Stambaugh Building Phone RI 7-0771

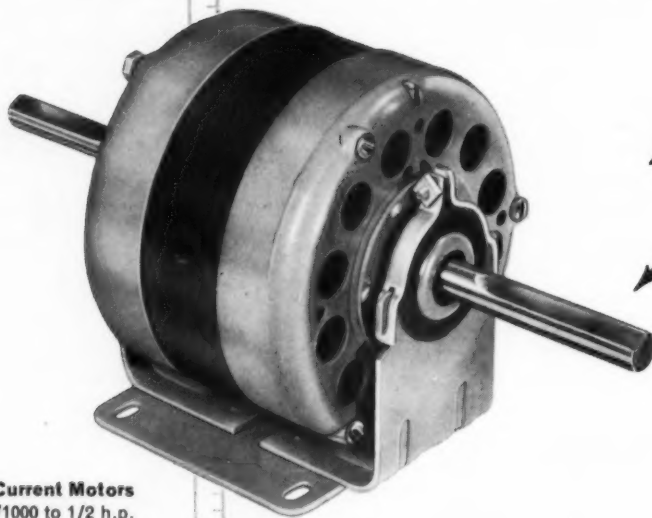
THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of
Carbon, Alloy and Yoley Steel

General Offices: Stambaugh Building - Youngstown 1, Ohio
Plants: Youngstown, Ohio; Struthers, Ohio; Indiana Harbor, Indiana

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT -
MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED
RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

this Howard motor



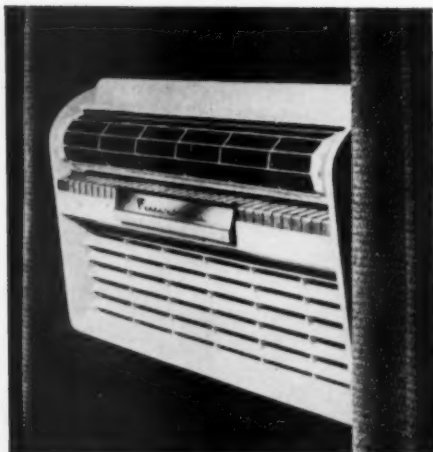
Universal and Direct Current Motors
1/1000 to 1/2 h.p.

Shaded Pole Motors—1/2000 to 1/8 h.p.

Induction Motors—1/1400 to 1/4 h.p.

is used by fresh'nd-aire

**and many other leading manufacturers of
air conditioners and window fans**



Fresh'nd-Aire Deluxe Model—
produced at the Fresh'nd-Aire factory, Grayslake, Ill.

The famous Fresh'nd-aire room air conditioner uses Howard's Model 5000 motor for dependable performance, economy and long life. This well-known manufacturer helps prove our point—you can tell a motor by the company it keeps.

HOWARD Model 5000 is a 6-pole Shaded Pole Motor with drawn steel housing and self-aligning bearings, and is available as a two speed or single speed motor with or without rubber mounts, resilient base and overload protection. H.P. ratings offered are 1/15 h.p., 1/12 h.p., 1/10 h.p. and 1/8 h.p.

If you have a quantity application, check with Howard for fractional h.p. motors. Our line is the largest and most varied in the industry. Write-wire-or phone (Racine 2-2731) for complete information TODAY!



HOWARD INDUSTRIES, INC. • RACINE, WIS.

HOWARD

SALES OFFICES: 208 No. LaSalle St., Chicago, Ill. • 942 S. La Brea Ave., Los Angeles 36 • Room 4822, Empire State Bldg., New York 1

DIVISIONS: **EMC** ELECTRIC MOTOR CORPORATION  CYCLOHM MOTOR CORPORATION  RACINE ELECTRIC PRODUCTS

Production of room air conditioners at Fresh'nd-Aire

a photo story featuring highlights of finishing, assembly and testing operations

by *Lewis W. Seil* • PLANT MANAGER, FRESH'ND-AIRE COMPANY, GRAYSLAKE, ILLINOIS;
AS TOLD TO *Matt E. Heuertz* • ASSOCIATE EDITOR

finish

Soon after the Fresh'nd-Aire Company, a Division of the Cory Corporation, began production of room air conditioners in its Chicago factory early in 1952, the need for a separate plant to keep up with production schedules became quite evident.

As a result, Cory acquired a new 52,000 square foot plant on a 14½ acre site in Grayslake, Illinois, about 35 miles northwest of Chicago in the fall of 1952. In 1953, this new manufacturing facility was the subject of close to a quarter million dollar improvement program. At that time, straight-line production techniques and comprehensive research and testing departments were installed. As part of this program, a compact finishing department was established. It handles the stampings which form the chassis of the Fresh'nd-Aire units.

At the start of the production process, all stampings are transported by an overhead monorail conveyor through a cleaner tank where the alkaline detergent is maintained at a temperature of 212° F. The ware is conveyed to a combination rinse and phosphatizing tank (temperature 150°-160° F.).

Following these "baths," a black prime coat is applied to all stampings in a hand spray booth. These parts now are air-dried on a continuous overhead monorail conveyor. When dried, they are delivered to the head

of a 600-foot roller conveyor where the chassis is built-up.

Parts, which will either contain water frequently or will be exposed to constant water baths, are given the added protection of a sprayed undercoat to further weather-proof them.

The unit then continues along this waist-high roller conveyor through the chassis build-up.

Assembly operations

The assembly process begins and component parts are added in this





All Fresh'nd-Aire chassis parts receive a zinc chromate prime coat (left). Parts air-dry on overhead continuous conveyor.



The chassis base plates are thoroughly undercoated to make them weather-proof.



As painted chassis skeletons move along the roller conveyors, the motor and fan assembly are attached in place.

sequence: base plate, duct work for evaporator and condenser, and motor supports. Then, the final lacquer is applied to the chassis skeleton. After the latter is air-dried, the evaporator, condenser, motor with blower wheel and fan and the solenoids are secured in place. At this point, the accumulator-tubing is welded to both the evaporator and condenser.

Dehydration of system

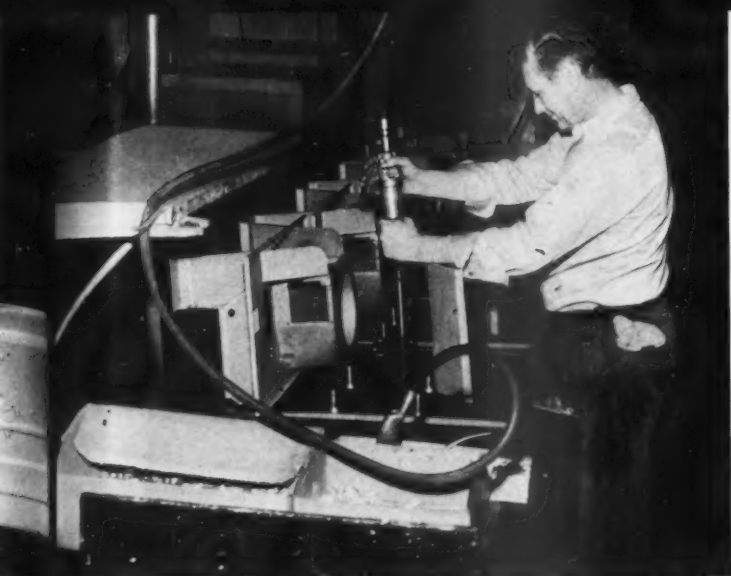
Now, the production process has reached a point where the units can be shunted to one of two conveyor lines which are straddled by infrared ovens. Here dry air is circulated through each unit while it's being heated externally in the oven to dry out the air conditioning system. Units

The condenser and evaporator coil assemblies are now affixed to the chassis.



Further along the air conditioner production lines, the refrigerant lines are soldered.





them *At start of production lines, duct work for the evaporator and condenser plus the motor supports are installed.*

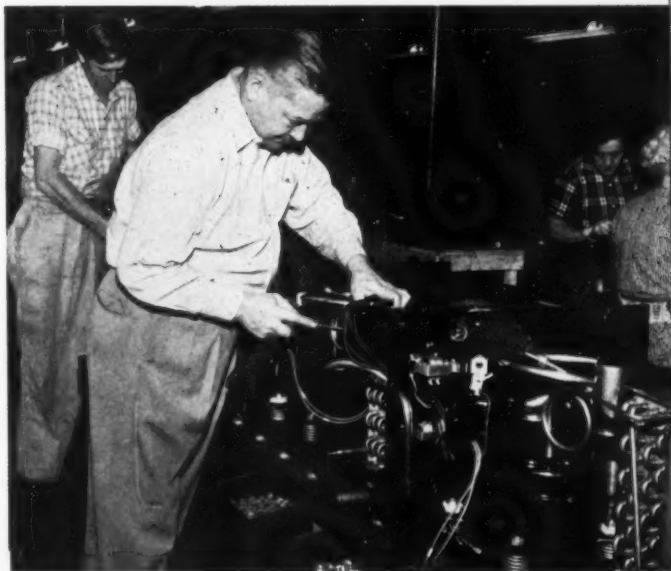


Next the air conditioner chassis skeleton is sprayed with a final lacquer coat.

move slowly through the ovens, and are pre-dried for 20 minutes.

Some 15-20 minutes in the dehydration process are saved here by a pre-drying operation. In a sub-assembly performed along the main production line, the accumulator bottle is soldered to the refrigerant tubing. Before this accumulator-tubing assembly is welded to both the evaporator and condenser, it is completely dried out in a batch-type, gas-fired oven for 15 minutes at a very high temperature. A total of 30 accumulator-tubing assemblies can be dried out in this oven at the same time.

Compressors now are installed on the units. Next the process tubes are soldered to the accumulator assembly and condenser.



Dew point testing

At the exit end of the infra-red ovens, the conveyors merge again

erant *Units spend 20 minutes dehydrating in infra-red ovens which straddle the assembly line conveyors.*



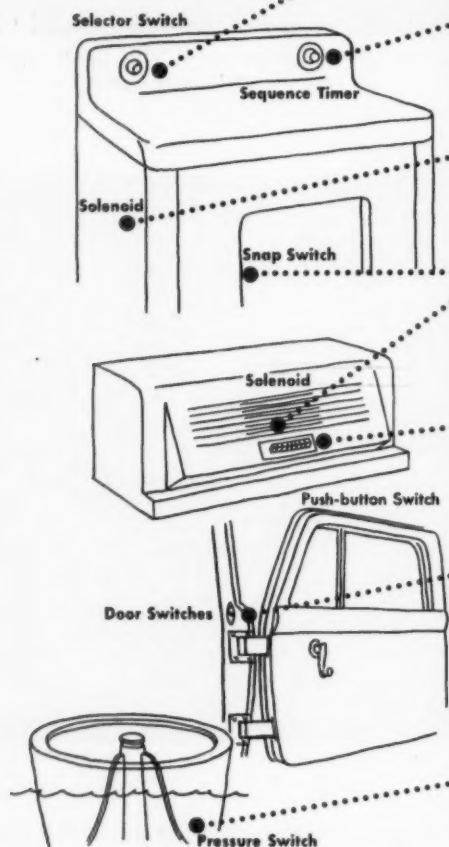
At the exit end of the infra-red ovens, the units are given a dew point test.



for CONTROL...

of Electro-Mechanical Force
Consult with Soreng First

Some of the Applications
of Soreng-Designed Controls



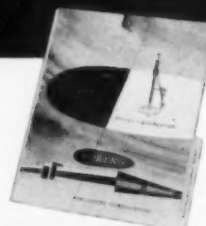
Soreng controls can be custom designed— to meet
your specific requirements—at mass production prices.

SORENG

• PRODUCTS CORPORATION

9559 Soreng Avenue, Schiller Park, Illinois • Plants: Schiller Park, Ill. • Fremont, Ohio • Spring Valley, Ill.

For complete facts write for your data
folder on Soreng Controls



OTHER SORENG PRODUCTS FOR THE APPLIANCE, AUTOMOTIVE AND AIRCRAFT INDUSTRIES

Solenoid Selector Switch Timer Snap Switch Push-button Switch Door Switch Solenoid Valve



These front and back views of mock-up show typical parts of the famous Fresh'nd-Aire room conditioner manufactured by Cory Corp. Each unit has approximately thirty-three parts made by Danielson for the Cory Corp.

Whether you need a single stamping or a complete assembly, let us show how we can fit into your production schedule, to your advantage!

Write — 'phone — or wire us today!

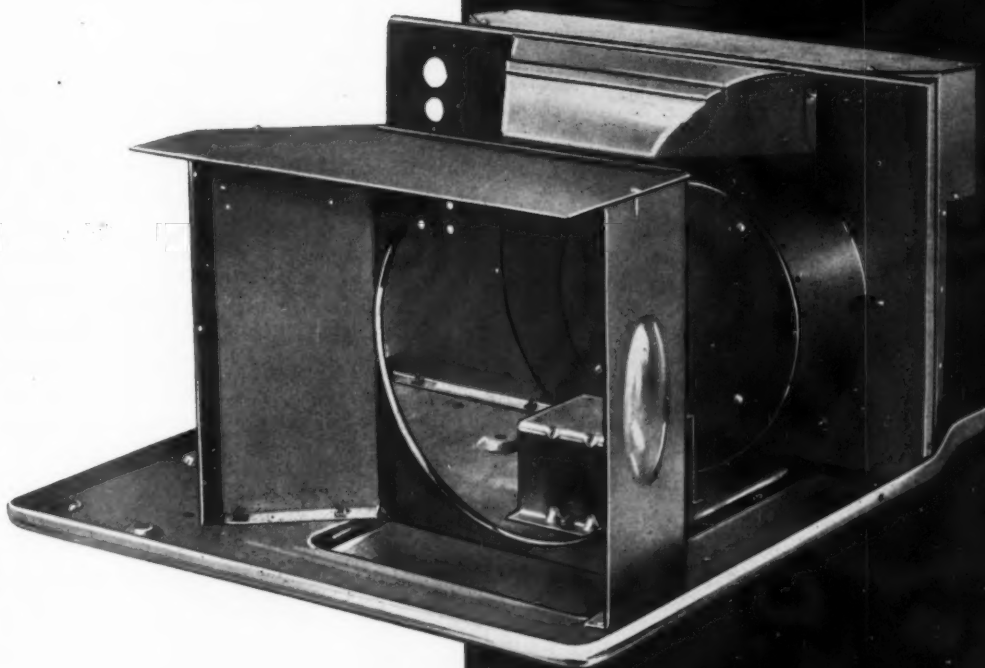


V. W. DANIELSON
MANUFACTURING COMPANY

3340 W. HOPKINS ST. • MILWAUKEE 16, WISCONSIN • Phone CUSTER 3-3800

for
Stampings
Fabrication
and
Spot Welding
see
DANIELSON

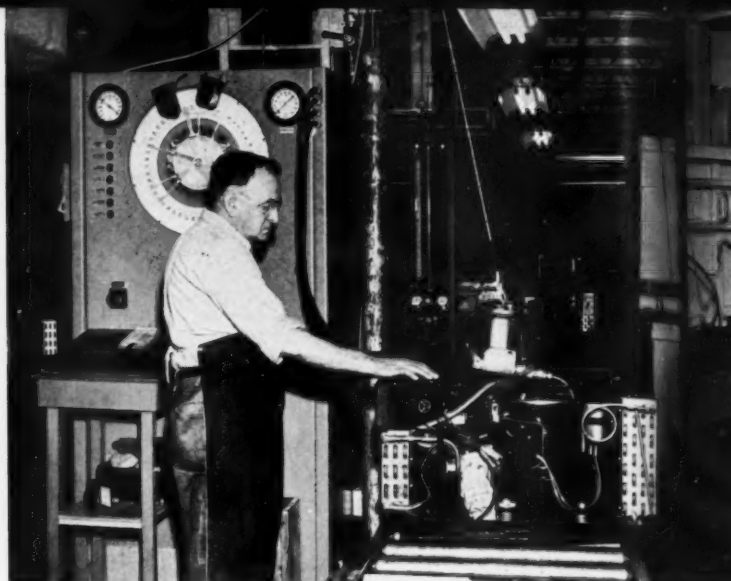
...



SAVE
Time and Money
with DANIELSON



Pre-cut, sound-deadening material and small duct parts are affixed to the almost finished air conditioner.



Automatic charging machine gives unit its final refrigerant charge. Machine will reject a unit which will not hold a proper vacuum.

At this station, units receive a preliminary charge of refrigerant and air.



into one roller conveyor. And, at this point, there is a special station where all units are tested to a -50° F. dew point.

Next, the all-important compressor is bolted to the chassis and compressor process tubes are soldered to the accumulator assembly and condenser. As the units move along the line, the wiring harness with the push-button switch is installed. And, pre-cut sound deadening material is affixed over the duct work.

Then, a preliminary leak test for the system is conducted in a specially pressurized room that straddles the assembly conveyor. For this test, the system is charged with approximately 1 oz. of refrigerant and 150 lbs. of air. An "electronic nose" on a special

electronic gun is used for leak detection. This instrument is so calibrated to detect leaks so small that it would require years for the system to lose its charge. After this preliminary test, the initial charge is removed.

Two vacuums are pulled through the entire system—the first is a rough vacuum, and the final vacuum is to approximately 450 microns. Using a special automatic charging machine, which automatically rejects a system that will not hold a proper vacuum, the final refrigerant charge is given the unit.

Performance testing

The fully charged air conditioner units are now shunted to one of two roller conveyors which extend down

View looking down toward the end of the production line. Small parts are attached to units in this final assembly area.



Final wiring hook-up is made, and the solenoids are attached to the electrical system.





In double-walled test room, each unit's performance characteristics are thoroughly checked.



Following performance tests, the unit's process tube is pinch closed, clipped off and soldered shut.

both sides of a double-walled test room. A relative humidity of 50% plus/minus 2% is maintained in this room with an 80° plus/minus 2 F. dry bulb and 67° F. wet bulb.

To thoroughly check each unit's performance characteristics, large groups of air conditioners are run for 30 minutes in this test room, and temperatures and wattage continually checked. During these checks, air off the evaporator is blown into the center of the room. Air off the condenser is exhausted into corridors between the inner test room and the enclosed outside wall. A 95° dry bulb is maintained on the condenser (or corridor) side. As a further check, random samples of production units periodically are subjected to

much more rigid tests in the plant's laboratory.

Upon emerging from the test room or "house within the factory," the refrigeration processing tube is carefully pinch-closed, clipped off and soldered shut. Testing never stops at Fresh'nd-Aire, and so a final leak test is conducted in still another pressurized room. Here the compressor is run for 20 seconds without the fan motor turned on. This check creates an internal pressure of approximately 350-400 lbs., and the unit is again tested for leaks with an "electronic nose."

As soon as the unit emerges from the pressurized room, the leads to the solenoid and terminal block are

to Page 71 →

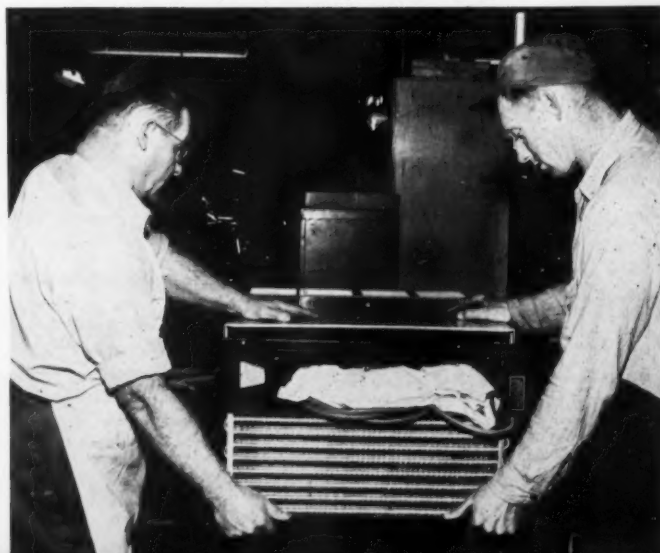
With aid of special "electronic nose", the air conditioners are tested for leaks.



As one part of the final electrical check, the push-button controls are thoroughly tested.



The completed and tested chassis is slipped into the outer cabinet just prior to final packaging.



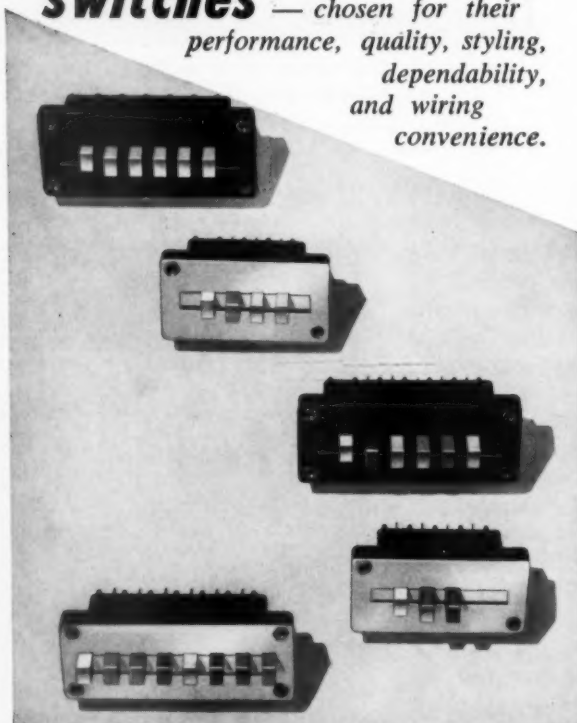
Fresh-ind-air's

push-button controls

are



switches — chosen for their performance, quality, styling, dependability, and wiring convenience.



ARK-LES is a major supplier of switches for manufacturers of electrical appliances. Any switching requirement can be met by Ark-les engineering; switch types such as the following are standard production:



- Multi-circuit push-button
- Multi-circuit rotary switches
- Electric range switches
- Rotary selector switches
- Toggle switches
- Momentary-contact push-button

Write today for your copy of our electric appliance switch catalog. Samples of Ark-les switches are available on request.



ARK-LES SWITCH CORP.
51 Water St., Watertown 72, Mass.

use these

GRIPCO CLINCH NUTS

with the exclusive

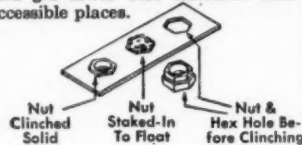
hex on hex

feature



for "fixed" fastenings for "hard-to-reach" or blind assemblies. They wear longer, hold tighter, give greater customer satisfaction.

See how leading appliance manufacturers get lower cost fasteners into inaccessible places.



Gripco Clinch Nuts can be either clinched solid for a rigid application or staked in with a six point staking punch to give a floating effect. This floating effect takes care of misalignment and makes the application of the bolt easier. Gripco clinch nuts can be clinched or staked with stationary or portable hydraulic or air equipment. Details on request. Write for samples and data sheet.

Typical Applications



GRIP NUT COMPANY

308-Q 5. Michigan Avenue, Chicago 4, Illinois

113

NEWCOMB-DETROIT

PIONEERS IN ENGINEERING,
MANUFACTURING & INSTALLING OF



INDUSTRIAL OVENS
•
SPRAY BOOTHS
•
PARTS WASHERS
•
DUST COLLECTORS
•
HEAT and AIR SYSTEMS

For Bulletins and Quotations, Wire, Write or Call—

NEWCOMB-DETROIT

5771 Russell Street
Detroit 11, Michigan

TR 3-2100

ESTABLISHED 1913

- DETROIT DIVISION
- GRAND RAPIDS DIVISION
- NEWCOMB INDUSTRIES, LTD., WINDSOR DIVISION

HOT SPRAY is HOT NEWS!

WESTERN UNION
W. P. MARSHALL, PRESENT

DOMESTIC SERVICE
Check the class of service desired. Otherwise the message will be sent at full rate otherwise.

INTERNATIONAL SERVICE
Check the class of service desired. Otherwise the message will be sent at full rate.

Full Rate Telegram
Day Letter
Night Letter
Serial
Night Letter
Time Filed

CHARGE TO THE ACCOUNT OF

NO. 062 DL PD HOUSTON TEX 61047A

H HTA 062 DL PD HOUSTON TEX 61047A

PRODUCTION SUPERINTENDENT
YOUR PLANT

INVESTIGATE IMMEDIATELY. PRODUCTION SAVINGS.
USING SPEE-FLO HOT SPRAY HEATERS. HOT
SPRAY FINISHING ASSURES ABSOLUTE QUALITY CONTROL.

THE SPEE-FLO CORP.
720 POLK AVE.
HOUSTON, TEXAS



SPEE-FLO
HOT SPRAY
HEATERS

720 POLK AVE. • HOUSTON, TEXAS

finish MAY • 1955

SUPERIOR FINISH IN LESS TIME AT LOWER COST

OUR wide range of applications includes radios to kitchen cabinets, hot water heaters to new motor cars.

Let us prove to you with facts and figures how other firms in your field are using SPEE-FLO Hot Spray Heaters to reduce production costs with labor and material savings.

Faster application of high solids film permits one coat to do the job of two coats.

Material viscosity reduced by heat allows lower atomizing pressures . . . sharply reduced overspray cuts material consumption.

SIMPLE • EFFICIENT • MAINTENANCE FREE

Don't Delay - Mail Today!

SPEE-FLO Hot Spray equipment merits your consideration

THE SPEE-FLO CO., Dept. 1x-5, 720 Polk Ave., Houston, Texas

Builders of practical industrial and automotive hot spray equipment.

Please send me information on your line of hot spray heaters best suited to our work. Type of products being finished _____

Application is conveyorized _____ turntable _____ mobile _____ other _____

Average volume of material per gun per hour _____

Type of material _____ Please have representative call _____

Name _____

Company _____

Address _____

City _____ State _____

5141

39

There's everything you'd expect of a
Robertshaw-Grayson product in

NEW UNITROL® 200

**WATER
HEATER
CONTROL**



UNITROL 200 features include dust-proof filter; air-gap construction; gas valve body of special aluminum alloy to resist gas corrosion; immersion parts of red brass and copper to resist water corrosion.

Ask your water heater manufacturer for full details or write:



Robertshaw-Fulton

CONTROLS COMPANY

Grayson Controls Division, Long Beach, California
Robertshaw-Fulton Controls (Canada) Ltd., Toronto

EYE-APPEAL that gives water heaters added sales appeal

STYLING that permits concealed or flush-on installation

COLOR that harmonizes with metal trim and available in several finishes

EASE OF SERVICING that's as simple as one-two-three without breaking connections

FINEST PERFORMANCE that's traditional with UNITROL Water Heater Controls

Forming water heater tanks for enameling

a few pointers on the fabrication of "boilers" for glass lining

by George W. Landis • RHEEM MANUFACTURING COMPANY, CHICAGO, ILLINOIS

WITH the desire of manufacturers of water heaters to have glass lined tanks for their heaters, we are faced with the problem of proper design for glass lining.

The people with whom we must work have been making boilers for many years. They have made good boilers for coating with molten zinc.

The molten zinc covers a multitude of sins, or at least we assume so. When we try to cover this fabrication with glass, we will have bare spots, blisters, and oxidized areas, resulting in an unsatisfactory tank—to say nothing of the design that allows the glass to fracture during assembly, or fracture after being subjected to pressure.

It is our job to point out these sources of failure and trouble, and to sell the fabricator the design that we can coat for a satisfactory tank.

Let's take a look at the many types of heaters that are made.

In the gas-fired, breaking it down by the method of handling products of combustion, there are:

1. Center flue
2. Off-center flue
3. Floater: Which is further broken down into the rear flue and the full floater.

To these we add to our problems the plus head with minus bottom, the minus head and minus bottom, and the last and by far the hardest to run, the plus head and plus bottom.

Then there is the electric which has the virtue of no flue, but does have electrode openings which must be covered.

With all of these designs, let's look

at the basic problems and determine what we must have in a formed tank to be able to do the job of enameling that will make a tank that is satisfactory with a glass lining.

First, gauges must be selected that will give sufficient strength to the formed shape after the annealing that occurs during enameling. The selection must be made so that the shape will withstand the hydrostatic pressure within the tank, and so that the metal will not move and fracture the glass.

Second, the radii should be sufficiently large to allow the glass to cover; and at areas to be welded during assembly should have sufficient radii to allow the metal to expand from the heat of welding without fracturing the glass. A rule of thumb is that all internal radii should be three times metal thickness.

Third, we come to double thickness of metal. The ideal formation would be a drawn shell with one thickness of metal. But as of now, that is a wishful dream.

The next best is a butt welded joint. This is being done in most cases for shell side seam. With proper penetration and removal of scales, slag or flux provides a good joint for enameling.

In many tanks a head is inserted into a shell in the same manner as for galvanizing. This creates several problems. A wide area of double thickness of metal results, and when fired gives an underfired condition at this point or an overfired condition

Adapted for *finish* from a presentation before the 2nd Pacific Coast Conference of the Porcelain Enamel Institute.

at the light gauge areas. Normally the unwelded edge is on the side of the tank that is to be enameled and boiling, blistering or roll back will occur along this edge. After the tank has been assembled and is in service the pulsation may fracture the enamel along the open edge.

We should endeavor to have the minimum of overlap at any double thickness area.

Fourth is welding. When we join one piece of metal to itself as in a shell, or two formations together, the success or failure to our enameling is largely in the welding.

We have many types of weld being used. The butt weld, hand arc, submerged arc, resistance, projection, sigma, gas weld, and others.

The basic points to remember are that we must have:

No carbon or flux in the weld. Full penetration of the metal at the weld, no cracks or craters to cover.

All edges rounded and smooth. Strength to withstand required pressures.

A solid weld so leaks do not appear after coating.

Removal of splatter, scale, high-points, or roughness prior to coating.

Fifth, we must have a round shell to start with. I do not have to remind you that we cannot make a round out of an oval. Usually it is the other way. We make an oval out of a round.

When we can get the fabrication to do these things, our only problem is to apply the best coating available to resist the corrosion of water.

EPON[®] RESIN does it!

DAISY AIR RIFLES
get a new, better blue coat
—with 80% less labor
and material costs



Epon resin-based enamel has made it possible to conveyorize Daisy's barrel finishing process, resulting in much faster put-through. The enamel was formulated by Egyptian Lacquer Company, South Kearny, N. J., and Lafayette, Indiana.

HERE'S HOW...

THAT favorite boyhood companion, the Daisy Air Rifle, is sporting a new coat of barrel bluing, more attractive than ever before. It makes these guns look like real firearms. It's news for industry, because the new barrel coating is corrosion resistant, tough and *far less costly*.

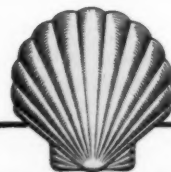
Daisy tried for years to find a suitable paint to replace their costly fused salt bluing-process . . . a paint that is chipproof, weatherproof and capable of forming a thin, hard film on curing. They found the answer, finally, in an Epon resin-based baking enamel.

The Epon enamel is applied by spray coating and—thanks to ease of application—the whole barrel

coating and curing process is now conveyorized, with an 80% over-all saving in finishing costs, including labor and materials.

In almost any surface coating application, users find that Epon resin-based paints and enamels cost less to apply and are more durable. They have excellent adhesion, high resistance to impact and abrasion . . . plus outstanding resistance to moisture, heat and corrosives.

Ask your own paint supplier for Epon resin-based coatings for your particular need . . . or call on our sales offices for names of suppliers near you. Write for the full Epon coatings story, "Planning to Paint a Pyramid?"



SHELL CHEMICAL CORPORATION

Chemical Partner of
Industry and Agriculture
380 Madison Avenue
New York 17, New York

Atlanta • Boston • Chicago
Cleveland • Detroit • Houston
Los Angeles • Newark • New York
San Francisco • St. Louis

IN CANADA:

Chemical Division, Shell Oil
Company of Canada, Limited
Toronto • Montreal • Vancouver

Pre-finishing room cooler cabinets

tunnel opening on metal cleaning machine at Buckley plant can be enlarged to accommodate air conditioner cabinets up to 55" x 36" in size

A METAL cleaning machine, designed for current production and also for future requirements, has been placed in operation at Buckley Manufacturing Co., Cincinnati, Ohio.

The machine is presently being used for pre-finishing operations on room air conditioner cabinets and parts with a maximum size of 36" x

18". The unit includes washing, phosphate coating and chromic acid rinse and drying stages, handled on a monorail conveyor. The conveyor operates at approximately 5 feet per minute, giving a production capacity of 300 to 600 cabinets and parts per hour.

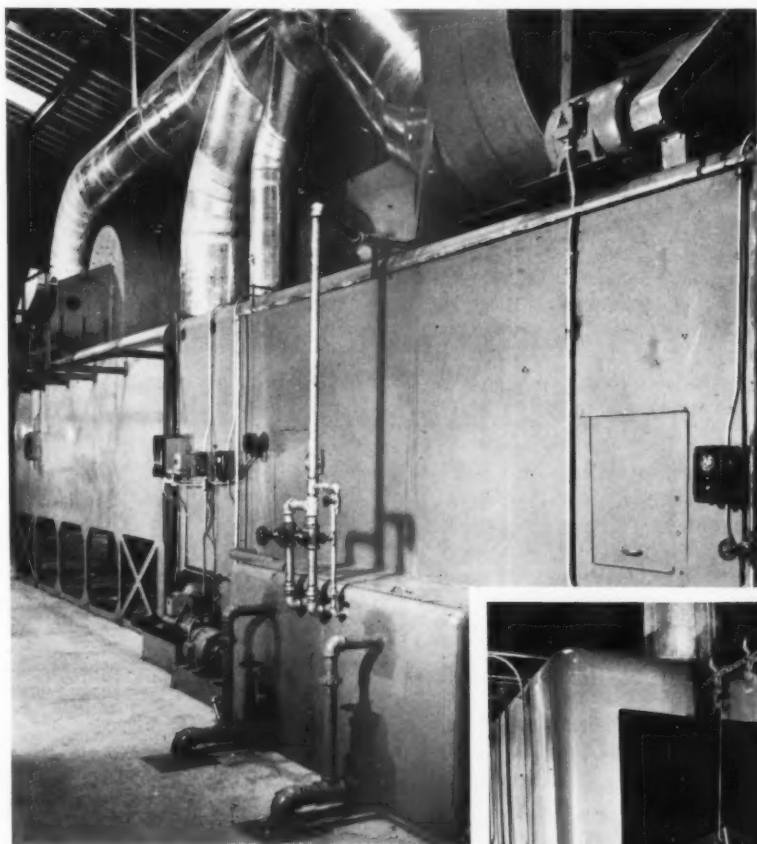
When larger cabinets, up to 55" x

36", are to be cleaned in the future, the tunnel opening can be increased to accommodate the larger sizes. All other requirements for the pre-finishing of the larger parts are already in place: spray and drying nozzles, extra tank and pump capacity, etc.

The pre-finishing stages are listed as follows: approach, 6 ft.; hot wash, 5 ft.; drain, 8 ft.; hot phosphate treatment, 5 ft.; drain, 7 ft.; cold rinse, 2½ ft.; drain, 8 ft.; chromic acid rinse, 2½ ft.; drain, 6 ft. Following these operations, the parts emerge, travel 12 feet, and then enter a 20-foot hot air drying section.

The solution tanks on the machine are of ample capacity for the large pumps used. Heated by submerged, gas-fired tubes, each tank has a recirculating system which removes entrained contaminants, keeping the solution usable for a longer period of time.

To effect the greatest possible economy in operation, waste heat from the tank heating units is used for drying the parts in the hot air blow-off section.



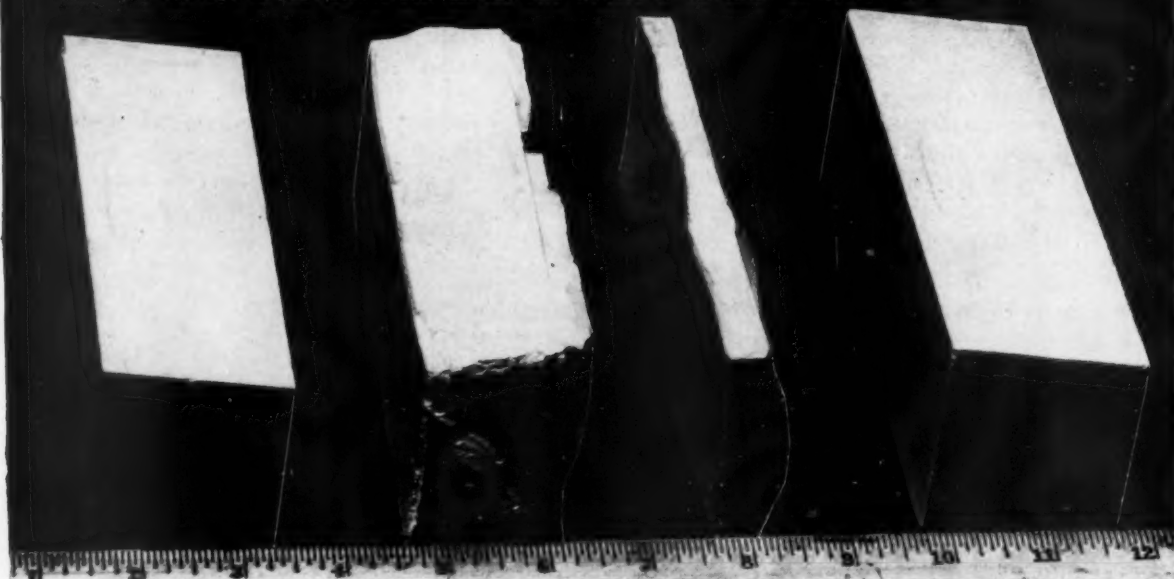
Shown here are two views of the metal cleaning machine arranged in a U-shape to give a compact unit 47 feet long. Air conditioner cabinets are hung from every third hook on the conveyor chain while smaller parts are hung from every hook for the trip through the machine

PHOTOS COURTESY CINCINNATI CLEANING & FINISHING MACHINERY CO.



MCDANEL

At left is the McDanel Super High Density Brick before and after one of the exhaustive field test runs. Regular porcelain brick is at the right of the picture. Both samples were installed in the same mill during tests.



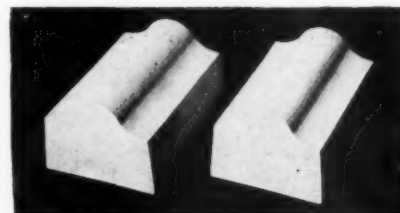
NEW HIGH DENSITY MILL LINING BRICK HARDER! LONGER LASTING! LOWER COST!

● As early as 1952, McDanel placed this amazing super high density mill lining in the field to test it. Test after test, McDanel Super High Density Brick has lasted two and a half times longer than standard porcelain linings. You know what this means in lower mill operating costs! McDanel Super High Density Mill Lining proved to be harder, more uniform and longer lasting. Start saving on operating costs, and get better results from your mills. Investigate this new McDanel Super High Density Mill Lining Now!



WRITE FOR THE FACTS!

This four-page folder, "Facts About McDanel Super High Density Mill Linings" is yours for the asking. Gives weights, performance data, sizes, advantages and cost information. Send for yours today!



McDANEL SUPER HIGH DENSITY LIFTER BARS

... made of the same high quality as McDanel Super High Density Brick. Write for information!



MCDANEL

REFRACTORY PORCELAIN COMPANY

BEAVER FALLS • PENNSYLVANIA

Industry responsibilities in assuring a bright future for porcelain enamel

A REPORT TO THE WEST COAST *by Glenn A. Hult* • PRESIDENT, PORCELAIN ENAMEL INSTITUTE,
VICE PRESIDENT, FERRO CORPORATION

IN THIS presentation, let me first do a little analyzing and examine some facts and predictions. We will attempt to set the stage and then see what we have to do to maintain our position—or to enhance our position.

Competition and research

First, let's talk about our competition with synthetic finishes; organic coatings; and paint. We have tough, aggressive and hard hitting competition. It is estimated that there are 40 to 50 times more synthetic finishes sold than porcelain enamel. The important point to stress here is that on this sales figure there would be at least 40 to 50 times more money spent for research and development in this field by the producers than for porcelain enamel, and this would not include the huge sums spent by the suppliers of the individual basic ingredients, or chemicals, such as resins, suspension vehicles, etc. We do not find the basic suppliers of chemicals to porcelain enamel frit doing this extensive research and development.

Research and development is the important key to our success and future. The results may be in direct proportion to the amount of money spent on it. Its growing importance is shown in the following table:

Amount spent on research

From 1776 to 1948 (172 years)	\$16 Billion (spent on Research)
From 1949 to 1953—5 years	\$16 Billion " " "
1954—1 year	\$ 4 Billion " " "
Estimated in 1965—1 year	\$13 Billion — will be spent on Research.

From these figures, one can see that more and more money is being spent *each year* on more and more

research and development. *Can the porcelain enamel industry maintain this pace?*

Some facts and figures

Our market research shows that the porcelain enamel frit business has more than doubled since 1941. Another way to look at it is this . . .

Estimates show that in 1940—\$130 million of porcelain enameled products were produced . . . as compared to \$382 million in 1953. Indications are that this figure can go to \$488 million by 1960.

This data then proves that the industry is growing and moving, which is most encouraging. Another check, which helps further to prove this statement, is that today there is over 3½ times more enameling capacity in this country than there was in 1940.

A look at the progress which has been made in porcelain enameling during the past 20 years shows a 74% reduction in the thickness of enamel to produce a white finish. In other words we are getting more miles per gallon, plus many improvements in the properties of the ultimate finish.

Summarizing briefly—our industry has grown during the past 15 years . . . the equipment has been improved . . . and the porcelain enamel

finish has been improved. This is a good sign and a healthy condition. We think this trend will continue.

We have a *good future*. Let's touch on that here. One of the largest producers of home appliances stated in the last annual report . . . "in the years between now and 1963 the expected growth in the company's business will require doubling the volume of goods produced." As you know, home appliances use porcelain enamel, and this means further expansion for this finish in this industry.

Looking at the future

There are now around 165 million people in the United States. Predictions are that by 1960 there will be 175 million and by 1965—185 million people. These increases in population mean more homes—more schools—more hospitals—commercial and industrial buildings—all offer great potentials for products which are porcelain enameled.

An inspection of our future from the steel producers' position (as steel goes, so goes porcelain enamel) shows that in 1940—82 million tons of steel were produced. Now the steel mills can turn out about 124 million tons per year. By 1965 we will need a minimum of 145 million tons. This last estimate is based on the fact that today ¾ ton of steel is used per person. Ben Fairless (chairman of the board of U. S. Steel Corporation) stated: "If per capita consumption of steel remains where it is and population estimates for the next 20 years are correct, we will need 14 new plants the size of the new Fairless Works located in Philadelphia."

Another brand new material is porcelain enamel on *aluminum*. In 1940 about 202,000 tons of primary aluminum were produced; in 1954 over 1,000,000 tons were turned out. The

industry is still expanding. There is a tremendous potential here for porcelain enamel.

There is still another new material, and this is porcelain enamel on *aluminized steel*. When we find out how to use it, there appears to be a broad field and new uses for this material.

Industry responsibilities

The facts I have presented indicate a bright and rosy future for porcelain enamel. It means more porcelain enamel being used.

But, before we become too optimistic, let's examine another facet and that is — *what industry has to do to grow — to move ahead — and to assure itself of a bright future!*

Who is Industry in our case? Who is responsible for our future and growth? I believe it is a 3-way responsibility.

We have these 3 "members" of the porcelain enamel industry.

1. Frit producers
2. Metal producers
3. Porcelain enameling plants

The responsibilities of these 3 groups are many. Some of these responsibilities are very evident and others easily overlooked.

It is apparent that porcelain enamel must be competitive to synthetics — not only in price but in quality . . . We must have lower temperature coatings, and by this I mean temperatures in the range of 1200° F. for porcelain enamel on steel. The thickness of coating over the past 15 years has been reduced by 74%. We *cannot* stop here. Our next development should eliminate the blue ground coat. The steel producers can help by producing a sheet that can be coated with white direct-on and in working out the steel problems for lower temperature enamels. Only one steel producer has been successful to date in turning out a steel sheet which will elimi-

nate the blue ground coat — and this only in limited quantities.

It is important to have the correct design in the product — and, after we have the correct design, that the product be properly fabricated. We must avoid products that are not suited to porcelain enamel. It is not a universal finish . . . Let's realize its limitation. On this question of design and fabrication we have an important job in the education of the designer, the engineer, the architect on how to use porcelain enamel. The Porcelain Enamel Institute can help in this work.

New products and new processes

As an industry, we should be willing to try new products and new processes when they are available — not only to meet the expanding markets, but to help in lowering costs. We hear now about flow coating — continuous dipping — automatic spray equipment designed for specific products and electrostatic spraying. It is estimated that industry will spend over \$300 billion in the next 10 years on plant modernization to keep in step with technological progress.

After the product has been properly designed, fabricated, porcelain enameled and assembled, then it must be properly packaged. Just after World War II in 1946 and 1947 the porcelain enamel industry was hard hit by a deluge of product damage in shipping. Out of this difficulty was born National Safe Transit which has done a colossal job.

As an industry, we must have competition, but we must realize that we should be competing — not so much among ourselves, but against other types of finishes. This is very important.

One of the best ways to fight competitive finishes and to conduct a broad educational program is to support the Porcelain Enamel Institute. We need joint "all-porcelain enamel programs that will reach all markets" and PEI is trying to do this job . . . This is a big responsibility of industry.

PEI asks your cooperation in developing statistical information that

to Page 74 →



"WAITING FOR THE NOON WHISTLE AGAIN?"

ONE IDEA

seen at the

1955 Industrial Finishing Exposition

and

42nd Annual Convention American Electroplaters' Society

may save your company
thousands of dollars!



**PLAN NOW TO ATTEND JUNE 20·21·22·23, 1955
PUBLIC AUDITORIUM, CLEVELAND, OHIO**

Times have changed! There have been many important advances in the industrial finishing industry. There is a great need for knowledge and information about those new manufacturing processes, machinery, and improved methods in the science of industrial finishing which have been developed during the past three years.

That's why the 1955 Industrial Finishing Exposition is so important. And that is why the papers delivered at the 42nd Annual Convention of the

American Electroplaters' Society will mean dollars in the pockets of the firms who attend.

The many new ideas in industrial finishing all add up to making it possible to produce better finished products at a lower cost.

All sessions of the 42nd Annual Convention of the American Electroplaters' Society will be held under the same roof with the Industrial Finishing Exposition . . . the only show since 1952. You will see . . .

1001 IDEAS FOR THE ADVANCEMENT OF THE SCIENCE OF INDUSTRIAL FINISHING!

FILL IN THIS CARD COMPLETELY. Use TYPEWRITER only! Handwritten or hand-printed card not accepted. Incomplete cards subject to delay upon admission at Exposition. **DO NOT MAIL THIS CARD.** It is for your convenience to save your time in registering. Bring it to . . . "EXPEDITED REGISTRATION" desk at the Exposition.

FPM

Your Name _____
Title _____
Company Name _____
Company Address (Street) _____
City _____ Zone _____ State _____
Member of _____ Branch, AES—Non-Member _____
Delegate _____ Alternate Delegate _____
Your Hotel _____ Room _____

Save time—

USE THIS EXPEDITED REGISTRATION CARD
ADDITIONAL REGISTRATION CARDS
may be obtained from any Exhibitor or by
writing:

Harold Bartlett, Exposition Manager
41st INDUSTRIAL FINISHING EXPOSITION
American Decorating Company
1849 West 24th Street
Cleveland 13, Ohio

*Here's an opportunity
that doesn't come
every year!
For money-making
ideas...
See...attend...*

**1955 INDUSTRIAL FINISHING EXPOSITION and
42nd ANNUAL CONVENTION
AMERICAN ELECTROPLATERS' SOCIETY**

You are cordially invited to attend the
**4th INDUSTRIAL
FINISHING EXPOSITION**
and the
42nd ANNUAL CONVENTION
of the
AMERICAN ELECTROPLATERS' SOCIETY
Held under one roof and during the same week
CLEVELAND PUBLIC AUDITORIUM, CLEVELAND, OHIO
June 20-21-22-23, 1955

Exhibit hours: { June 20 . . . 10:00 A.M. to 6:00 P.M.
June 21 . . . 12:00 Noon to 10:00 P.M.
June 22 . . . 9:30 A.M. to 6:00 P.M.
June 23 . . . 9:30 A.M. to 4:00 P.M.

● The last Plating Show was held in Chicago in 1952. That means the show in 1955 provides the first opportunity in 3 years to get first hand all of the many advances made in the plating industry.

The 1955 convention and show brings big opportunity for a mutual exchange of ideas, including engineering, research and other important know-how in the fast changing industrial finishing industry.

Progressive firms know it's important to keep up to date.

See 1001 Ideas for the advancement of the Science of Industrial Finishing!

This invitation is an expedited registration card. It is intended to speed your entry into the show . . . to avoid waiting in line at the registration desk.

★ ★ ★

For further information about the Convention or Exposition, contact:

Harold Bartlett, Exposition Manager
4th INDUSTRIAL FINISHING EXPOSITION
American Decorating Company
1849 West 24th Street
Cleveland 13, Ohio

RCA model plating shop sets standards for production

thousands of different sizes and types of parts are plated in model shop

SO MANY of the products manufactured by the Engineering Products Division of Radio Corporation of America are plated that the company runs a model plating shop at its Camden, New Jersey, plant to test methods and materials. Standards set here are followed in the division's production plants.

Thousands of different sizes and types of parts are plated with a variety of finishes in the model shop. Much of the plating done is with chromium. According to Sam Chapman, who is in charge of chrome plating and who has 25 years' experience in the business, parts of an electron microscope, for example, are chrome trimmed for decoration. Immersion in the chrome bath for 10 minutes gives a satisfactory coating of .0002".

Hard chrome plating, on the other hand, is used on parts where surfaces are subjected to extreme wear. For instance, the film slide chute used on a 16 mm motion picture projector must have a smooth, hard chrome finish because film runs over it constantly. The hard surfacing required

6 hours' immersion in the bath; the coating is about .01".

For the chrome plating operations, RCA uses uniquely designed anodes. The hooks, for example, which are used to hang the anodes, are made of bronze and are molded right into the body of the lead itself, not bolted on as they are in some types. These hooks never loosen or corrode. The anodes never fall into the bath. There

is no need to remove, clean and re-bolt the hooks every few days, as is common practice in many plants.

Chapman says that the unique anode design permits better circulation of the plating solution which in turn prevents gas pockets, "boiling", and the consequent need for protection from spattering. RCA has used anodes of this type for four years.



Calvin Lape removes a chrome plated part from bath, while Sam Chapman, who is in charge of chrome plating, holds one of the 28 lead anodes found in the model shop's chrome plating bath. The brick-lined, acid-proof tank holds 300 gallons, and has a steel exhaust pocket around it. About 150 sq. ft. of work is plated per 8-hour day. Current is supplied by a 2000 amp generator; density is 150 amps per sq. ft.

PHOTO COURTESY FEDERATED METALS

finish MAY • 1955

Development, evaluation of an orange enamel of improved light fastness

by William A. Gottfried • NAVAL AIR EXPERIMENTAL STATION, PHILADELPHIA, PA.

THE color retention characteristics of organic finishes on aging quite often are of prime importance. Several months ago, for example, the Naval Air Experimental Station was assigned the task of increasing the noticeability of training aircraft in flight. This task was accomplished by the use of a paint scheme in specific patterns and colors. The pattern finally selected was a split paint scheme; as for color, the upper half of the plane was painted with glossy white and the lower half with glossy international orange lacquer. The latter approximates the color of a tangerine skin. This scheme was adjudged by a team of physicists, physiologists and aviators to be the one which provided the maximum of noticeability.

Unfortunately, to a paint chemist, the above scheme spelled trouble. The currently used aircraft enamels and lacquers in the international orange color darken on severe outdoor exposure to sunlight, to assume a muddy brown undertone. This change in color would destroy, to a large extent, the increased noticeability which was initially achieved. Hence, an investigation was undertaken to develop light, stable, international orange colored coatings and also to develop a suitable rapid method for measuring color change which could be incorporated into the specification.

Two commonly used pigments

The two most commonly used pigments to attain the international orange color are chrome orange and

molybdate orange. The former is a basic lead chromate and the latter is a co-precipitated pigment consisting of lead chromate, lead sulfate and lead molybdate. According to current literature, chrome orange supposedly shows less tendency to darken on severe exposure to light than is characteristic of molybdate orange. On the other hand, molybdate orange possesses a brighter shade and imparts many times the hiding power to films than does chrome orange. Inquiries made of pigment manufacturers revealed that a new type molybdate orange, markedly improved in light fastness, was now being manufactured.

Accordingly, four enamels were prepared in the international orange color, each in a pigment volume concentration of 15 per cent. Their constants are given in Table 1. Basically, they differ in pigmentation. Formula No. 1 contains the molybdate orange for which light-fastness is not claimed. Formulas No. 2 and 3 contain the new improved lightfast molybdate orange, and the respective pigments were obtained from two different

manufacturers. Formula No. 4 was made with chrome orange.

Judging color retention

The most acceptable means of judging the color retention characteristics of an enamel or lacquer is to make exterior exposures of the colors over an extended period of time. However, such tests are of long duration and immediate results were needed. Hence, sets of panels were prepared from each formulation and duplicates of each were placed in a weatherometer for 168 hours. At the end of this period, visual comparison with an unexposed set of panels revealed that Formula No. 4 had darkened and assumed a muddy brown undertone. Formula No. 1 also darkened, to an even greater extent, but it did not turn brown. Formula Nos. 2 and 3 showed a very slight darkening and were still bright and clean in appearance.

The next step was to devise an objective means of evaluating the above phenomena for incorporation into the specification in order that the objectionable chrome orange and the non-

TABLE I

	Formula No.			
	1	2	3	4
% Pigment Volume	15	15	15	15
% Pigment by Weight	29.3	31.1	29.8	34.7
% Vehicle Solids by Weight	30.9	30.0	30.9	28.4
% Volatile by Weight	39.8	38.9	39.3	36.9
Viscosity in Seconds with #4 Ford Cup	134	131	127	100

The vehicle used in all four formulas was a medium oil length alkyd resin, 52% linseed oil and 34% phthalic anhydride.

light-fast molybdate orange would not be used in the enamels procured under the specification.

The elimination of the chrome orange containing enamel proved relatively simple. It was accomplished by casting the various enamels with a draw-down blade in a uniform film (0.001 inch dry film thickness) over a smooth-surfaced heavy paper chart. Before applying the orange enamels, the paper was marked with two adjacent solid black and white rectangles. These were coated with a suitable clear coating to render the surface impervious and resistant to paint liquids. The apparent reflectivity of the black section was zero, and the white portion, $80\% \pm 1\%$ relative to magnesium oxide. The orange enamels were then applied. After drying, apparent daylight reflectance measurements were made of the paints over the black and white sections using the reflectometer with a green filter. The per cent contrast ratios were calculated as follows:

$$\frac{\text{reflectance over black}}{\text{reflectance over white}} \times 100.$$

The three molybdate orange enamels showed a contrast ratio of 98%, whereas the chrome orange enamel yielded a mere 80%. This substantiated the fact that, when viewed with the unaided eye, the molybdate orange enamels had excellent hiding power; they obliterated the contrasting background, whereas the chrome orange enamel afforded poor hiding over the black background section. In use, therefore, enamels made with the molybdate orange would give 18% more hiding since the average painter usually builds up a film with just sufficient thickness to cover fully the surface being painted. Stated another way, a given volume of enamel will cover 18% more surface; therefore, less paint is needed per unit area.

A more difficult task was to distinguish between the two types of molybdate orange, viz. the light-fast and non-light-fast pigments. A search through literature was again made. Two articles, (1) and (2), were found which described a method used to evaluate the color differences between two paints of similar, but some-

finish MAY • 1955

TABLE II

Formula No.	Lightness-Difference	G Value	G ¹ Value
1	5.0	19.1	15.0
2	.7	17.2	16.6
3	1.0	18.1	17.2
4	2.3	15.5	13.8

Note: The unaided eye can usually distinguish differences larger than .5.

what different spectral characteristics. It was necessary to have a reflectometer equipped with amber, green and blue filters. After accelerated weathering, reflectance readings were to be taken on the weathered and unweathered panels using each of the three filters. The following coordinates were to be calculated:

$$L=10(G)^{1/2} \quad A = \text{Amber filter}$$

$$a = \frac{7L(A-G)}{B+A+2G} \quad G = \text{Green filter}$$

$$b = \frac{2.3L(G-B)}{B+A+2G} \quad B = \text{Blue filter}$$

Readings were to be taken with each filter before and after weathering.

From the above values, color differences were to be obtained as follows between the films before and after weathering:

$$\text{Color difference} = \sqrt{(L-L^1)^2 + (a-a^1)^2 + (b-b^1)^2}$$

As previously stated, the above method requires the use of a reflectometer equipped with three filters and the resultant calculations are time consuming. Since the use of chrome

$10(G)^{1/2} - 10(G^1)^{1/2}$. ($G-G^1$ represents the respective differences before and after weathering). Table 2 gives the lightness difference readings between the four enamels and the G and G¹ readings.

It can be seen that this method will differentiate between the two types of molybdate orange. However, it is cautioned that this simplified method of calculation can be used only where the lightness of a color differs. It should not be used where hue and saturation also differ. For small color differences where hue and saturation vary along with lightness, color change calculations should be made from measurements using the three filters described earlier.

The information above was presented to show that although Navy laboratories work on tasks peculiar to the Navy, the results obtained may be applied to everyday industrial applications. Colors similar to international orange are used on many taxicabs and traffic signs to increase visibility. By formulating orange colored synthetic enamels or lacquers with modern molybdate orange pigments of improved light fastness, stable colors can be obtained, and by adopting the rapid and simple tests described herein, the user can, within several days, be assured that he is procuring the right material.

Acknowledgement: The author wishes to acknowledge the efforts of J. A. Fredrickson, of DuPont's pigments department, and Edward Peattie and Jack Ohr, of the Aeronautical Materials Laboratory, without whose cooperation the work described here could not have been accomplished.

1. Proposed Tentative Method for Calculating Small Color Differences from Data Obtained on the Hunter Multipurpose Reflectometer-ASTM Designation D-53T obtained from the 1953 Preprint of ASTM.

2. Method 623.1 of Specification TT-P-141b, Federal Specification on Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing.

3. Spec. MIL-L-11195A, Lacquer, Lusterless Hot Spray.

Note: The opinions expressed in this article are those of the author and not necessarily official opinions of the Naval Air Experimental Station or the Navy Department.

orange pigment with its concomitant muddying on exposure can be eliminated by incorporating the contrast ratio test in the specification, it was considered that light-fastness measurements might be made merely by measuring the difference in lightness before and after exposure, as is done in spec. Mil-L-11195A (3). Hence the following method was tried:

Apparent reflectance measurements (green filter only) were made before and after exposure in the weatherometer for 168 hours. The lightness-difference estimate, ΔL , was calculated from the expression, $\Delta L =$



Panel on new developments, left to right: Marc Lipinski, Metallizing; O. A. Wheelon, Verson; M. J. Day (moderator), Crucible Steel; R. W. Breckenridge, PMI; James M. Leake, Leake Stamping; Frank Bogart, Marlette; W. R. Weaver, Modern Pattern & Plastics.

Metal stampers hold technical meeting

annual spring technical meeting of Pressed Metal Institute draws record attendance

illustrated with finishfotos

A RECORD attendance of about 450 metal stampers was registered at the 6th Spring Technical Meeting of the Pressed Metal Institute, held March 16-18 at the Carter Hotel, Cleveland, Ohio. It was the first technical meeting held under the direction of Harold A. Daschner, new managing director of PMI.

Safety

The opening session on "Safety Doesn't Cost—It Pays" drew a capacity attendance. C. Glenwood Rose, president of Judson & Rose, Inc., and chairman of the PMI Safety Committee, was moderator for the panel.

Jack Kleinoder, secretary-treasurer, Volkert Metal Stampings, stated that his company enforces a strict safety

rule program in conjunction with their employee training program. "We have found from experience that apprentices are so safety conscious that they follow safety regulations closely after 8-9 months."

Moreover, "We keep minute details of all accidents, whether time lost or not", added Kleinoder.

Ben Small, personnel director, Morrison Steel Products, Inc., mentioned several points for management to follow, namely—remove faulty safety attitudes by a good training program; offset distractions on the job; maintain dignified supervision; and minimize boredom on the job.

Ernest Davis, vice president, Kickhaefer Mfg. Co., suggested the

following procedures to follow in promoting safety:

Build as much safety as possible into the dies; see that no job is done unless proper safety regulations are followed: see that no equipment is used unless in proper working order; and discuss safety problems with the individual press operators.

L. E. Dail, president, Dail Steel Products, Inc., told of a "self-insurance" plan used by 7 plants in Lansing, Michigan. While premiums for the 7 firms have totalled \$578,000 in eleven years, claims and reserves against claims total but \$236,000.

A safety engineer, hired under the plan, spends at least 1/2 day each week in each of the 7 plants. "His frequent calls make for better house-keeping", added Dail.

In a discussion period following the panel on safety, Harold Daschner, PMI managing director, emphasized the need for more safety training for new employees—as well as for those employees with over 10 years service. It was pointed out that a recent PMI safety survey disclosed that many long-time employees tend to become lax about following safety rules.

Selling stampings

Harold Daschner, PMI managing director, was moderator for the panel on "How We Sell Stamping".

Owen Wenning, sales representa-

The metal stampers spent one morning touring the plants of HPL and American Stamping. Photo shows one group inspecting an HPL display.



tive, Worcester Stamped Metal Co., listed five ideas which help to inspire confidence in sales personnel:

1. Like the person with whom you are dealing—should take time to study his personality.

2. Watch progress of interview. Let him talk and thus give you a chance to find ways to improve your presentation.

3. Expound the merits of your company's personnel—don't spare the details.

4. When the right time arrives, don't forget to ask for the order. Let the customer know that you really need and value his order.

5. With the order in your pocket, congratulate him on his good judgment and live up to it.

Seth G. Atwood, president, Atwood Vacuum Machine Co., cautioned his listeners on the importance of being sure of your grounds on patents before developing new products. He also urged that a prospective customer be shown something that has been proven—to let him know that your firm has gone through a development period.

Tooling, producing stampings

Another panel covered "Tooling and Producing Stampings". Bruce Krasberg, president, R. Krasberg & Sons Mfg. Co., was moderator.

W. C. Baguley, factory manager, The Lansing Stamping Co., told how his company keeps production records going back 40 years because they contain much valuable information which can be very useful in setting up new jobs. He said that each new job has a master key card which goes from department to department until the job is completed.

Speed control—automation key

Joseph H. Gepfert, district manager, Reeves Pulley Co., brought out the importance of the correct use of *time*—the fourth dimension in the production picture.

The other 3 dimensions—men, materials and machines—need to be coordinated through, what Gepfert called "speed control", which keeps work progressing in a continuous flow and does not permit some ma-

finish MAY • 1955



Panel on safety: L. E. Dail, Dail Steel Products; J. Kleinoder, Volkert Metal; C. Glenwood Rose (moderator), Judson & Rose; C. E. Meldrum, Brown-Lipe-Chapin; Ernest Davis, Kickhaefer; and Ben Small, Morrison Steel Products.



Panel on selling stampings: Seth G. Atwood, Atwood Vacuum Machine; Owen Wenning, Worcester Stamped Metal; and Harold A. Daschner (moderator), PMI managing director.

Panel on estimating: Thurston K. Reid, HPL Mfg.; R. W. Breckenridge, PMI technical director; J. J. Boehm (moderator), Boehm Pressed Steel; George E. Fauth, Bossert.



Panel on tooling and production: A. A. Poppelreiter, Douglas & Lomason; R. W. Breckenridge, PMI; Bruce Krasberg (moderator), Krasberg & Sons; W. C. Baguley, Lansing Stamping; and Joseph H. Gepfert, Reeves Pulley.



chines to be idle while others are way behind in production. He stated that he has seen many complaints disappear when the speed of operation is changed.

Gepfert mentioned a QM part which gave four different firms trouble in production. It was found that with the correct speed of operation, parts came out perfect, but had burrs with either faster or slower speeds.

He cited speed control as being the key to automation, which he defined simply as "picking something up and

doing as many operations as possible on it before we put it down."

The economic outlook

David Elliott, vice president, Cleveland Trust Co., told a luncheon audience that while he doesn't see any new or powerful stimulus to business, he predicts that overall business and industrial production will be up 4% over 1954.

Regarding the durable goods industry which suffered more of a decline in 1954 than other phases of

our economy, Elliott said it is "likely to exceed the rise in overall activity" in 1955. He added that a recent survey indicates that more people expect to buy appliances and home furnishings than in 1954.

New developments

The final session which also drew a near capacity attendance was devoted to "New Developments". M. J. Day, director of research, Crucible Steel Co. of America, was moderator.

to Page 71 →



J. M. Downie
McKinney Mfg.



R. O. Hughes
Chamberlain



D. R. Few
Dafew Tool



J. L. Prebish
Northern Metal



R. O. Braunschweiger
Acklin Stamping



John L. Hall
Allied Products



Herbert Kolk
Kolk Mfg.



William Grady
Chesterfield Steel



Carl Johnson
Larson Tool



H. T. Yingling
Mullins Mfg.



F. C. Weisbach
RCA



J. E. King
Worcester Pressed

candid finishfotos from Pressed Metal Institute technical meeting

J. R. Nikolais
Wallace Barns



T. B. Clark
Clearing



Russell Anger
Anger Mfg.



Vern C. Markley
Grand Haven Stmpd. Prod.



Gerald Thompson
Erie Art Metal



R. E. Kregger
Detroit Stmpg.



O. F. Huegel
White-Rodgers



R. S. Nestor, Jr.
McDowell Mfg.



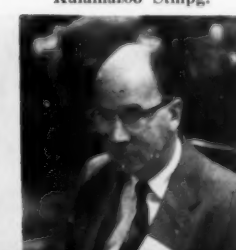
W. D. Wuest
Wuest Bros.



Frank Machac
Shakeproof



E. S. Van Dalsen
Kalamazoo Stmpg.



Walter Baird
Toledo Pressed St



New Flexibility...
New Versatility...
in light metal
tangent bending



Adjustable BENDING MACHINE

Designed for use on the lighter tangent bending assignments where our well-known Heavy Series machines are not required, this new Struthers Wells Adjustable Bending Machine is finding wide application in the appliance and other industrial metal working fields.

Fully adjustable to handle dies for a variety of products with ease and speed of changeover, the machine radially edge-bends preformed flanged sheets into complete wraparound units for window air-conditioners, TV cabinets and many other items—rapidly, smoothly and at low cost.

Shown at right is a typical Bending Machine operating sequence.

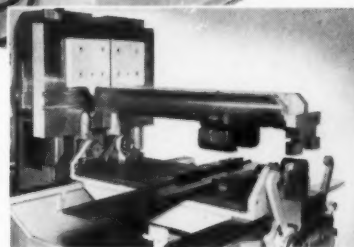
● Write for a quotation on your particular bending requirements.

MACHINERY DIVISION

Struthers Wells Corporation

TITUSVILLE, PA.

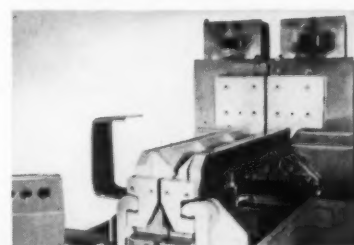
Offices in Principal Cities



● Flanged and punched sheet positioned for bending



● Two bends made in first operation



● Material positioned for second operation



● Second operation completes bending of parts

*St. Charles kitchens have
played an important part
in the development of
today's kitchen*



...and so has Du Pont **DULUX**[®] enamel!



America's leading home-appliance finish

56

Kitchens have come a long way since the St. Charles Manufacturing Company entered the field in 1935. Finding new ways to make kitchens more convenient, more pleasant to work in has been the constant aim of this company for the past twenty years. As a result, today's homemaker can have a kitchen that combines efficiency and beauty to a degree that the 1935 housewife never even dreamed of! The continued popularity of the St. Charles "Custom Kitchen" is proof that constant product improvement is vital in maintaining the acceptance of the buying public.

And so it is with America's leading home appliance finish—Du Pont "DULUX" enamel! Constant research over the years by Du Pont chemists has resulted in more rugged resistance to chipping, cracking, scratching or staining . . . easier cleanability . . . longer-lasting beauty, in white or sparkling color. That's why the "DULUX" of today meets the most exacting requirements of today's topflight appliance manufacturers.

E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.



"DULUX" ENAMEL
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

MAY • 1955 finish

A report on **COLOR** in the home appliance field



Five colors and white for General Electric line

"mix or match colors"—turquoise green, canary yellow, petal pink, cadet blue, wood tone brown

In its major appliance line for 1955, General Electric introduced "mix-or-match" colors in a program that includes matching "do-it-yourself" paints and counter tops.

"The day is not far distant when a kitchen of all white appliances will be as outmoded as the modern American home as the old-fashioned ice box and wood-burning stove," says G-E and then backs it up with the use of color throughout its entire 1955 product line. Six colors (including white) are offered. The "mix-or-match" color choice plan was designed to offer colors that will blend either individually or in combination with the all-over decorative scheme. Colors offered include turquoise green, canary yellow, petal pink, cadet blue and wood tone brown. All colors are available in the de luxe models in ranges, refrigerators, dishwashers and washer-dryer combinations.

In addition, certain medium and lower-priced units are available in canary yellow and turquoise green. All models are available in "satin white."

G-E officials believe that their color program offers homemakers these five specific advantages: (1) the combination of color with white in the kitchen; (2) the development of a kitchen of full color, without the necessity of purchasing all appliances at the same time; (3) the chance to combine two or more colors in the kitchen and laundry, as in other rooms of the home; (4) the choice of changing color from time to time without changing appliances; and (5) colorful kitchens for every income group and every decorative taste.

In 1946, when Frederick Rahr of the Rahr Color Clinic in New York began surveying the consumer attitude toward color in the kitchen for General Electric, consumer preference was less than 5 per cent. But the desire grew steadily through the years, and by 1954, Mr. Rahr's surveys revealed it was no longer a preference but a real demand. Over 50 per cent of the homemakers questioned said they would like to buy their next kitchen appliance in color.

But the General Electric Company, also interested in plastics (counter surfacing) and in alkyd resins (raw materials for paints), thinks it is not surprising that the company engineered into its color program the opportunity to choose colors for



Up to 130 pounds of food fits into the double-size freezing section of this new G-E refrigerator-food freezer combination. Door of freezer section opens with a foot pedal.

kitchen components other than the major appliances. Says G-E, "... the housewife can safely follow her own preferences and judgment, since all the colors have been planned for use together as well as separately."

Gray & Dudley—two years of pastel colors

Yellow and green — plus copper-tone for built-ins

R. E. Olesley, vice president and general manager of Gray & Dudley Company, Nashville, Tennessee, reports that the company has offered pastel colors in gas and electric ranges for about two years. When the company started out with four pastel shades, the tendency now is to standardize on two — yellow and green.



Monarch's new 32-inch gas range, featuring a pilot for automatic oven lighting, is "designed for the new modern kitchens with all the features of a full-size range."

In his report to *finish*, here's what Mr. Grimsley had to say:

"Before we started producing pastel shades of ranges, I made a trip over the country talking to magazine editors, home economists, distributors, and came back to the office firmly convinced that pastel appliances would have a place in the industry, at least for the next few years. It is true that volume percentage-wise would not be any great amount. However, for awhile we were turning out about 33 to 35 per cent of our volume in pastel colors.

"After we had produced color for almost a year and tried to convince our jobbers and dealers that color had a place in the industry, some of the 'big boys', by big boys I mean the nationally advertised boys, came out with pastel colors and this made our job, as a small company, much easier.

"We found that the major portion of pastel ranges went to what was considered the "borax" trade. This type of trade was represented by people that seemed to go for the over-stuffed living room suites, or the type of people that would buy their furniture, the five rooms, from \$299.00, etc. I think this type of volume came about because, up until this time,



Something new in food-keeping equipment for the home is the Foodarama, built by Kelvinator, which combines an upright freezer and moist-cold refrigerator side by side in a single cabinet. The refrigerator section has roll-out shelves, crispers, and a roll-out basket for fresh fruits.

the public had not been able to get a competitive priced gas and electric range in pastel colors. The only ones on the market at that time were very high priced appliances.

"As far as the colors are concerned, we started out with pastel yellow, green, pink and blue. The last two colors, pink and blue, have just about been discontinued and we have standardized on the yellow and green.

"We are in the built-in range business, and we are finding now that about 50 to 60 per cent of our volume is going out in the antique copper tone finish. This finish seems to be the most popular of any that we have ever produced."

Monarch ranges in color since 1931

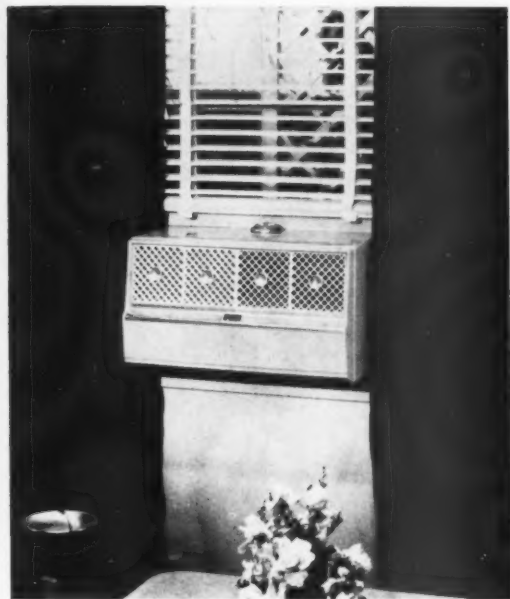
color twins of Sheffield green and ivory tan, with specification sheets showing additional colors

The Malleable Iron Range Co. of Beaver Dam, Wisconsin, builds electric and gas ranges, coal, wood and oil circulators, and electric water heaters. Colors have been offered in ranges since 1931.

In a statement to *finish*, covering current color policy, M. J. Maier, vice president, said, "We believe that the public makes the decision for the manufacture with reference to colored appliances. Monarch Ranges were manufactured in quantities in color in 1931 and 1932, and the trend today with a new generation is back to color which Monarch introduced to the trade during the past several years.

"The automobile is made in colors for only one reason and that is to increase sales. Color attracts and, if the appliance industry expects to attract the consumers' dollars, it must obsolete the appliance the customer is now using."

This photo shows the Servel room air conditioner in blonde cabinet finish. The other choice for air conditioner finish is mahogany.



Maytag's new Supermatic automatic washer and dryer, available in delicate green and subdued yellow, "blend perfectly with today's custom-designed kitchens."

Color for Servel's Wonderbar and air conditioner mahogany and blonde are the colors

Servel, Inc., Evansville, Indiana, reports that the company's household refrigerators, home freezers and water heaters will continue to be supplied with white exteriors in 1955. Refrigerators have light blue interiors and home freezers have ivory interiors.

The portable Wonderbar Refrigerettes continue to be offered in a choice of three exterior finishes—mahogany, blonde and white.

Room air conditioners are offered in a choice of mahogany or blonde.

Kelvinator offers a selection of eight colors

harvest yellow, spring green, buttercup yellow, fern green, lagoon blue, dawn grey, sand beige and Bermuda pink

According to Walter Jeffrey, manager of sales planning for Kelvinator, the colors now available on five refrigerator models for 1955 and three electric range models represent the widest range of color available in the industry. One of the major reasons that such a broad choice of colors has been made possible is in the development of a practical means for providing dealers with a method of display and selling without excessive product inventories. Another point was the selection of a single uniform white and gold interior to be used with every exterior color.

In an attempt to select colors that would cover the majority of current tastes, the choice was made by the product planning department under the direction of F. J. Worden, working with American Color Trends as color consultants. "With the choice of eight colors in eight basic appliance models, for a

total of 64 possible combinations, a new approach was needed to permit production on a systematic basis closely tied to demand and to keep distributor and dealer display stocks down to a reasonable minimum," Jeffrey said.

Most people, at one time or another, have chosen their combinations of colors in upholstery for a car through the use of a book with overlays, a shadow box or some other simplified method of choice without actually seeing the car to be purchased. Kelvinator has adapted this system for the selection of colored appliances so that the dealer need carry only one set of colored products in stock.

The color display center is an illuminated demonstrator. With the demonstrator, the homemaker is shown the actual enamel finish on a color panel of refrigerator steel more than 9 inches square, rather than a printed approximation of the true color.

The final touch is a transparent overlay of a kitchen scene, mounted on a viewing rack. As each steel color panel is inserted behind the overlay, the true colors show through on the range and the refrigerator, and also in the wallpaper and window-drapes of the kitchen scene, to show how a kitchen will actually look in any of the eight new Kelvinator colors.

Maytag says "Pasteltone" for modern living delicate green and subdued yellow

Early this year, Maytag announced "Pasteltone" Supermatics (automatic washer and automatic dryer) in "color keyed to modern living!"

In their presentation, copy reads, "In delicate green and subdued yellow, tastefully trimmed with sparkling chrome,



Base and wall cabinets with double doors on both sides are being introduced by Youngstown Kitchens. They are designed for double-duty—either for storage under and over a snack bar or in island-type installations.

these Supermatics blend perfectly with today's custom designed kitchens. And on your show room floor, or in your display window, these color keyed Maytag Supermatics have that 'look, linger, and long for' appeal that catches the shopper's eye, brings her up short, and starts her asking about Maytag."

According to a current report, the colored appliances by Maytag are not representative of any big percentage of total production. According to a spokesman for sales executives, the company has no big color plans for the immediate future.

Youngstown Kitchens offers "go-together" colors dawn yellow, meridian blue, sunset copper

The Youngstown color line was created in conjunction with Associated American Artists, the company's color consultant. They were selected to harmonize with colored appliances on the market today and with a wide variety of colors and hues

found in floor coverings, paint, wall paper, fabrics and other decorative materials, according to C. D. Alderman, vice president in charge of sales.

"These new colors open up an entirely new concept of kitchen decoration," Alderman declared, "because they have the remarkable quality of tying together any decorative scheme that a housewife may choose."

He pointed out that kitchen cabinets dominate the kitchen and provide the decorative link between floor and ceiling. All color finishes in the Youngstown line are semi-matte, "reducing glare and giving units an appearance of softness and warmth." According to Alderman, the move into color by Youngstown was not to get temporary attention but with the full fledged plan to sell color-finished cabinets in large volume, even though the company expects white to continue to be the best selling color in the kitchen.

Dealer displays and promotional material are now ready for use, and a strong current advertising campaign will support the showings.

Note: Mullins (Youngstown Kitchens) may be an important factor in the future of "built-in appliances"—a subject that will be handled separately by *finish* editors.

Colored ranges a flop

In checking with the Dortch Stove Works, Inc., Franklin, Tennessee, producer of ranges, we find little enthusiasm for colored appliances. Mr. T. F. Lance, president and general manager, in reporting to *finish*, said that from January 1, 1952, to January 1, 1954, colored ranges sold reasonably well, but during the year, 1954, they were a "big flop."

This and some other reports along the same line would indicate that, while the color trend is on the upswing, the "demand" is not uniform for all manufacturers and for all territories.

NOTE: Additional reports will appear in later issues. We will welcome reports and comments from all appliance manufacturers on "color."

Youngstown Kitchens has introduced nearly 30 new products, several of which are shown in this installation. Left of the Diana sink is the firm's new 30" wide front-opening Jet-Tower dishwasher. On the sink is the Select-O-Set, single-control faucet. Base cabinet to the right of the sink is fitted with a special grille door. It adjoins a new 15" base cabinet with two drawers. Wall and base cabinets at the right have double doors on both sides for easy access from kitchen or dinette.





For prize-winning finishes—gleaming whites or modern pastels—TITANOX white pigments are first choice. TITANOX titanium pigments are truly “blue ribbon” pigments, outselling all other makes combined.

For industrial finishes, TITANOX-RA, TITANOX-RA-50 and TITANOX-RA-NC stand out. Easy mixing and easy dispersing, these pigments give you the exact qualities of brightness, whiteness, opacity and resistance to fading and chalking that you desire.

For porcelain finishes, specially developed non-pigmentary TITANOX-TG and TITANOX-TG-400 are now the accepted standards of the industry.

Our Technical Service Department will be glad to help you with your finish problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

TITANOX
brightest name in the finish

3058-A

TITANIUM PIGMENT CORPORATION
Subsidiary of NATIONAL LEAD COMPANY



finish MAY • 1955

61

EEl annual sales conference

discuss new trends stimulating electrical growth—including year-round air conditioning through use of heat pumps

THE development of year-round air conditioning is almost mandatory if the electric industry is to keep the proper balance and stability in its financial structure, and in revenues and earnings, according to Philip Sporn, president, American Gas & Electric Co.

Sporn told some 1200 persons attending the 21st annual Sales Conference of the Edison Electric Institute, held the last week of March at the Edgewater Beach Hotel, Chicago, that the "obvious solution is to develop winter load, and the most logical winter load on the horizon is electric heating."

Seeing the heat pump as "the ideal solution for year-round air conditioning of homes as well as commercial establishments," Sporn reported that some manufacturers are making good

headway in the development of residential packaged heat pump units. "As production increases, the first cost will come down sufficiently to put the heat pump in a much more favorable competitive position with the various fuel-fired summer air conditioner combinations."

New trends stimulating growth

Ralph J. Cordiner, president of General Electric Co., told members of EEl that "the next decade can truly be a thrilling experience. . .

"In 1955 the electric utility industry salesman has an opportunity that he has never had before in history. Never in any previous decade have all of the potentially favorable factors which exist today been available to us. . .

"We need no longer be held back

by threatened shortages of power, of materials or of customers", said Cordiner, emphasizing the need to adjusting "sights to much longer range planning—that planning from two to five years ahead is too short a period.

"Whether an organization is long or short-range in its thinking is a responsibility which rests squarely with management and supervision. The officers should free their time for planning by delegating the responsibility for daily operations to others. There should be no 'indispensable man or men' in the organization, least of all the officers. Officers should be spending from 75 to 90 per cent of their time planning to attain objectives forecast for 10 to 20 years from now.

A big and growing market

James H. Jewell, vice president Westinghouse Electric Corp., stated that a big and growing market can be summed up as follows: "more people, more families, more people on the move, more money, more new homes, and more appliances in existing homes. . . .

"With a package like this—in a dynamic, growing America—how many appliances should we sell—not over a 10-year span—but just in the next five years? The industry says 428,000,000."

The industry has the production capacity and the electrical energy to produce 428,000,000 electrical appliances, but if the industry is to sell that many appliances, it must solve the problem of adequate wiring, emphasized Jewell.

The 428,000,000 new appliances were partially broken down as fol-

to Page 71 →



Ralph J. Cordiner, president of General Electric, emphasizes his point that the electrical industry "need no longer be held back by threatened shortages of power, of materials or of customers."

finishfoto

ARI conference on air conditioning

place emphasis on the residential field as providing the big market for air conditioning equipment

THE residential air-conditioning field provides the really big potential market for air conditioning, three speakers at Atlanta agreed, at the Educational Conference held there on March 17-19, and sponsored by the Air-Conditioning and Refrigeration Institute.

Attendance for the 3-day conference was just under the thousand mark.

Need to educate the public

Jack Aldridge, building specialist for *Life* magazine, presented a motion picture which reviewed the tremendous increase of purchasing power on the part of the middle-class Americans and said, "I'm very bullish about the market for residential air conditioning. However," he pointed out, "a long-range program is needed by the industry to educate the American public. The industry needs national advertising and sales-promotion efforts at all levels. This is needed," he stated, "to offset the appeal of competition from without the industry by the automobile, television, appliances, travel, etc."

The utility viewpoint

C. M. Wallace, vice president in charge of sales, Georgia Power Company, in outlining the growth of air conditioning from the standpoint of a utility, stated that while industrial applications of air conditioning represent an expanding market, as does also the commercial field, it is the residential market which is "really the big field today."

"By 1963 residential air conditioning will represent 9% of the total kilowatt-hour annual load," he said, "as compared with the present .8%."

finish MAY • 1955

The woman's viewpoint

Covering the woman's viewpoint, Willie Mae Rogers, director, Good Housekeeping Institute, cited the many advantages of air conditioning in the home. "Women like the comfort of air conditioning," she said. "They like its benefits to health, the increase in efficiency, the greater cleanliness of the home and the way it keeps the family at home."

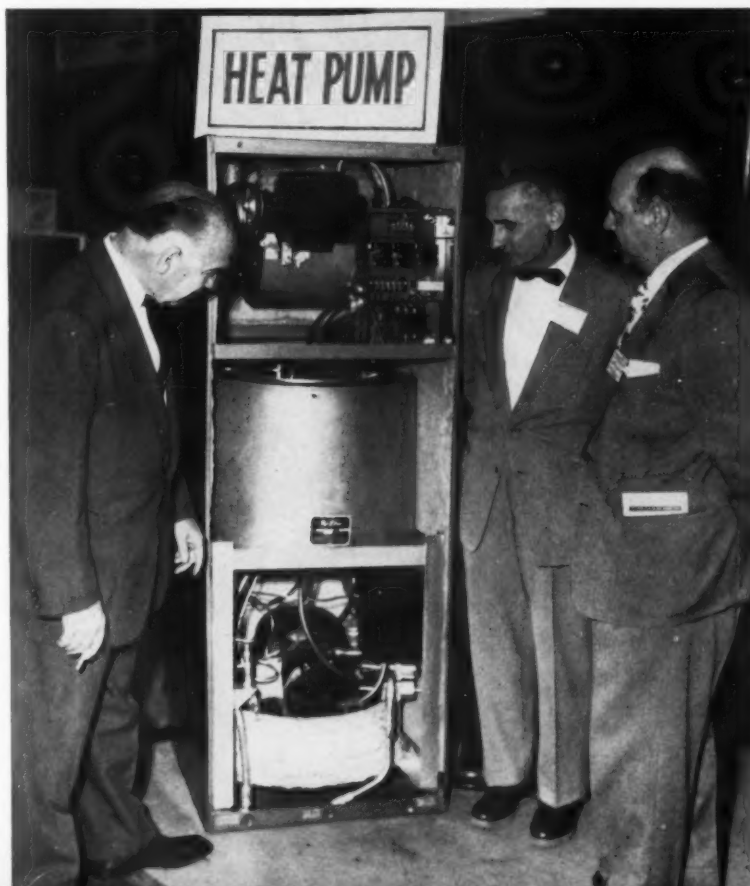
She urged the industry to devise more informative advertising, prepare clear and simple instruction booklets and provide more information to the buying public about the financing of air conditioning.

C. E. Stackpole, general sales manager, heating and cooling division, Union Asbestos & Rubber Company, gave a rousing, inspirational address on "How to Sell." Holding that the industry is not asking enough people to buy, he said, "We can double our business in 1955 if we ask people to buy." Stackpole predicted that the "residential air-conditioning business is going to be the real money-maker in this industry."

Opportunities in dairy field

Speaking on modernization in the dairy field, D. H. Burrell III, vice president, Cherry-Burrell Corpora-

J. F. Dailey, V. W. Tipton and Douglas Sterner, of Typhoon Air Conditioning Co., are shown with a Typhoon hermetic heat pump of 3-ton capacity.

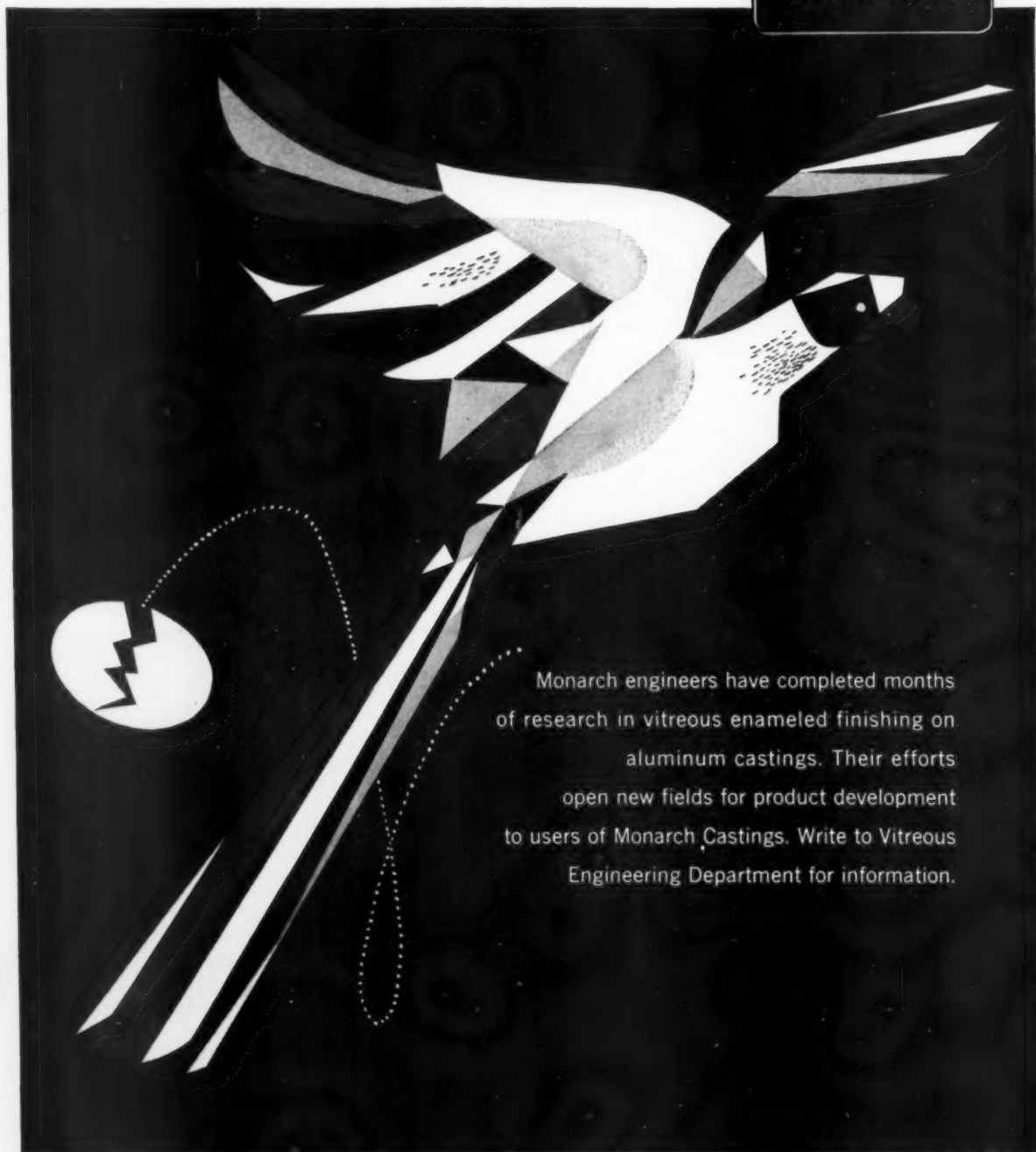


Visualize your products

using vitreous enameled aluminum castings

Picture the added sales appeal...with radiant color...surface protection

...design potential...plus the basic advantages of aluminum castings.



Monarch engineers have completed months of research in vitreous enameled finishing on aluminum castings. Their efforts open new fields for product development to users of Monarch Castings. Write to Vitreous Engineering Department for information.

MONARCH ALUMINUM MFG. COMPANY — 9215 DETROIT AVENUE — CLEVELAND 2, OHIO
MANUFACTURERS OF: Aluminum Permanent Mold Castings • Zinc Die Castings • Aluminum Die Castings
Exclusive Velvaglaze Finishing • Vitreous Enamel Finishing.

tion, sketched the expanding market and increased sales opportunity for refrigeration.

"Refrigeration is applied to raw milk at the dairy farm as an essential phase of pasteurizing and processing and is a 'must' in the transportation and storage of milk and the products of milk. In 1925," he said, "our national milk production was about 90 billion pounds. Today, it is at 125 billion pounds, and by another 30 years — 1985 — a figure of 170 billion pounds might be realistic."

Cold wall storage tanks, first introduced in 1945, he pointed out, now constitute over two-thirds of all tanks sold and are used by all segments of the dairy industry. Farm tanks, spectacular new boon to the dairy farmer, "are the hottest item in our industry today," he said. There is a realistic market of 400,000 such farm tanks, he said, with only 12,800 in use as of September, 1954. He also pointed to an existing market for soft ice cream freezers, bulk handling tanks, mechanically-refrigerated delivery trucks, automatic vending and dispensing equipment and pre-fab refrigeration storage.

"There are in use today over 10,-

000 over-the-road trucks and trailers equipped with mechanical refrigeration. Railroads are behind trucks in this respect," he said, "with some 1,200 mechanically-refrigerated railroad cars now in use. Experts predict that these figures will be at least doubled by 1960, and will hit an annual rate of increase of 5,500 to 6,000 at that time."

Expanding frozen food market

Dr. G. Hodges Bryant, executive director, Frozen Food Institute, in his talk on "The Expanding Frozen Food Market" estimated the potential growth in frozen-food sales in the next five years at 19%.

This increase — amounting to 781,160,302 pounds of frozen food — will demand a tremendous cubic footage of freezer space in thousands of new retail store frozen-food display cabinets, he said.

There is a shortage of lineal feet of display cabinets in stores now, Dr. Bryant said, and if there is a shortage now, there surely will be need for more cabinets to take care of any increase. A survey made in January of 1955 by the Frozen Food Industry, he said, showed an average of 33

lineal feet per store handling frozen foods with the display space fluctuating from 16 feet to 60 feet.

Great demand for retail refrigeration display cabinets

The demand for retail refrigeration display cabinets is great because the number of items being frozen are increasing in number as well as in brand names; there are over 312 brand names, he said.

"Chain stores have been seeing the light of day, especially in Metropolitan areas, and they are devoting more footage in every store to expanding their frozen food displays. Food chain operators, at their latest National Association of Food Chains Convention, resolved they will raise their frozen food merchandising sights to reach 21% of their total store sales in frozen foods by 1960. This means a lot of sales for the refrigeration industry," said Dr. Bryant.

Technical talks on installation problems consumed the balance of the 3-day conference with 76 educational exhibits on display by leading manufacturers of air-conditioning and refrigeration equipment.

R. W. Bee, of A-P Controls, explains functions of such new items as a crank-case pressure regulating valve.



M. J. Micklejohn, of McIntire, explains operation of unit which "dries, filters and neutralizes."





Leonard Mackasek
PEI



P. B. McBride
Porcelain Metals



Denis Mahoney
Payne-Mahoney



Lee R. Irwin
Day & Night



H. F. MacIntyre
Ferro Enameling



William Brinkman
PEI



J. Hodgkinson
S. Porcelain



Donald Taylor
Pacific Coast Borax



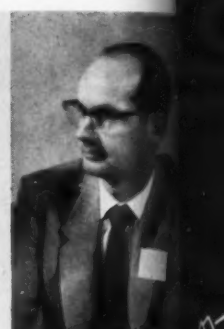
Ernest Hommel
Hommel



George Pfleger
Harshaw Chemical



Nelson W. Niece
Cameo



William Blackburn
Ferro



Dave Garen
Bureau of Ships



Harry Ingersoll
Pemco

Candid finishfotos From Porcelain Enamel Institute West Coast Conference

(read report in April issue of finish)



R. R. Sherrill and J. T. Van Hook
Bulwark Corporation of America



Russell Greer
Pemco



Hugh McE. Patton
Ingram-Richardson



F. E. Allen
Arch. Porc. Constructors



G. W. Hofstetter
Ferro



Hugh Penton
Cameo



Stan Penton
Cameo



Jack Rumer
Enamel Publicity



George Landis
Rheem



Norman G. Hodgson
AllianceWare



J. W. Vicary
Ervite



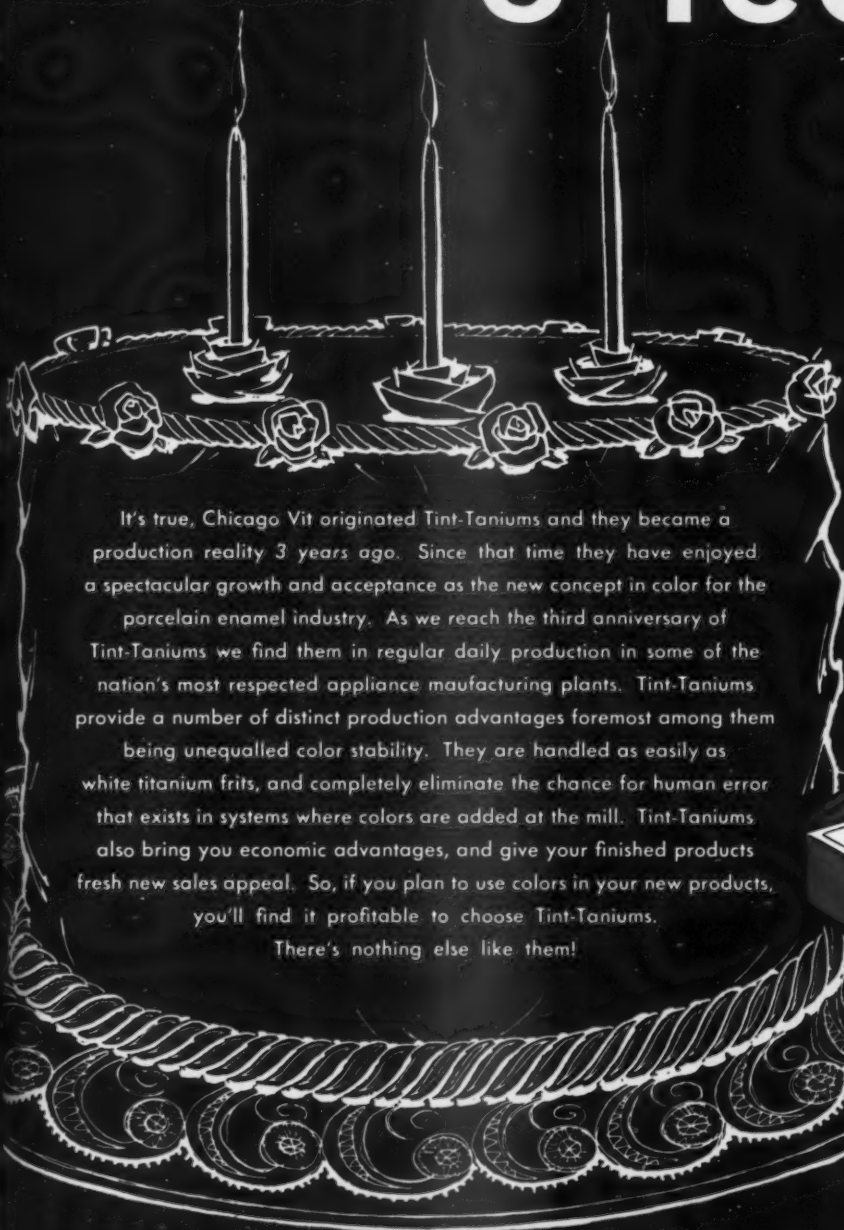
Glenn Hutt
Ferro



Joe Penton
Cameo

TINT-TANIUMS

ARE NOW **3 Years Old**



It's true, Chicago Vit originated Tint-Taniums and they became a production reality 3 years ago. Since that time they have enjoyed a spectacular growth and acceptance as the new concept in color for the porcelain enamel industry. As we reach the third anniversary of Tint-Taniums we find them in regular daily production in some of the nation's most respected appliance manufacturing plants. Tint-Taniums provide a number of distinct production advantages foremost among them being unequalled color stability. They are handled as easily as white titanium frits, and completely eliminate the chance for human error that exists in systems where colors are added at the mill. Tint-Taniums also bring you economic advantages, and give your finished products fresh new sales appeal. So, if you plan to use colors in your new products, you'll find it profitable to choose Tint-Taniums.

There's nothing else like them!



THERE'S NOTHING LIKE TINT-TANIUM

©Tint-Tanium is a copyrighted name.

Chicago Vitreous CORPORATION

1425 South 55th Court • Cicero 50, Illinois

New Industry Developments

LOOMROOF DEVELOPS NEW ALUMINUM ROOFING SHINGLES

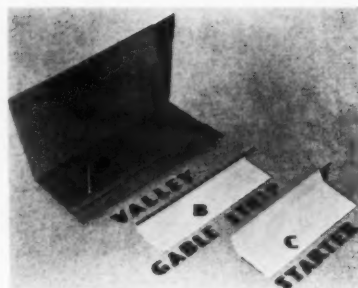
WHEN LoomRoof Corporation of America was organized in 1953 to manufacture an aluminum shingle in a variety of colors, their first step was to investigate and analyze information available on existing aluminum shingles. This led to development work on a new four-way lock shingle that could not lift or leak.

Next work was done on a method of applying a baked enamel finish to the surface of the aluminum. Engineers came up with a method of rolling onto a continuous coil of aluminum a choice of 12 baked enamel colors—using a process developed by Coated Materials. The coating is cured in an 85-foot oven in varying

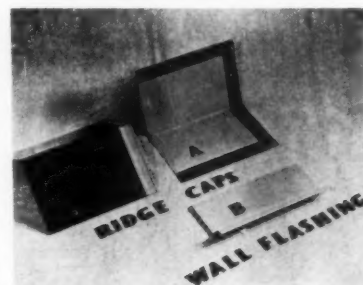
stages from 150° to 450° F. Forming and other fabrication operations follow the coating operation.

Accelerated weathering tests on the new shingles, conducted by American Chemical Paint Co., included a 120-hour salt spray resistance test (20% salt spray fog, 100% rel. humidity, 95° F.) and a 500-hour, 100% relative humidity test (110° F.) The shingles were said to have successfully passed these tests, which represented "extreme punishment", as well as adhesion and impact tests.

The aluminum shingles are now being produced in LoomRoof's plant in Glenshaw, Pa.



Typical examples of new-type aluminum roofing shingles developed by LoomRoof.



NEW CHAINLESS CONVEYOR HELPS JANITROL CUT COSTS

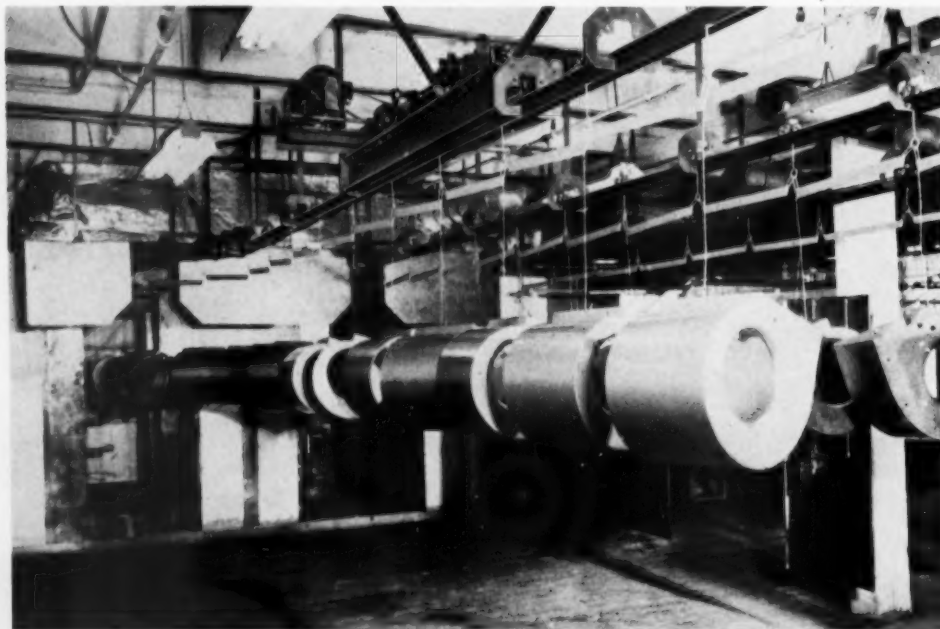
USING a new chainless conveyor system to move parts continuously through cleaning, finishing and baking operations is reported to have helped the Janitrol Division of Surface Combustion Corp., Columbus, Ohio, effect a 50% reduction in fin-

ishing costs for furnace parts.

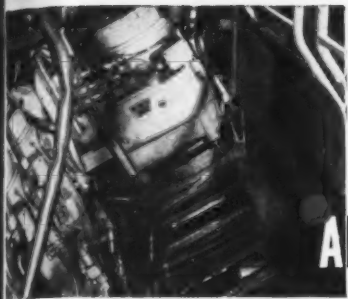
A single 8-hour shift is said to be able to handle work that previously kept three shifts busy under the former finishing method.

In the new Landahl chainless conveyor system, solid steel rods replace

the usual chain or cable between trolley units. These steel rod connectors pivot at both ends in ball and socket joints anchored with the trolley units. This feature facilitated use of a burn-off oven for removal of mill oil—as the free-acting bearing joints in the conveyor trolley are self-lubricating in normal action. Also, the



Chainless conveyor lines carrying Janitrol furnace parts into and from burn-off oven where the parts are degreased. Cooling lines are in the background.



AMAZING "AUTOMATED" DRILL-GRINDER TEAM DOES THE JOB 22 TIMES FASTER

Machining mounting surfaces on the underside of huge tank hulls required ten separate horizontal boring mill setups. Handling, positioning and working on the heavy, unwieldy hulls created a serious bottleneck in production.

Relying on Wean Equipment's reputation as a leading designer and builder of special machinery for industry this concern gave Wean the green light. Wean Equipment engineers set to work and came up with the first completely automatic adaption of a bank of grinding heads to work on an angular surface.

The machine grinds all surfaces simultaneously with unmatched precision, and completes its job

22 times faster than the old method. According to company officials the machine paid for itself in short order by increasing production, eliminating reworking created by human error, and releasing boring mills to other production work. Result: A second machine to perform a difficult drilling operation on the same hull was ordered from Wean. These are typical examples of Wean Equipment's ability to develop and build practical automation equipment.

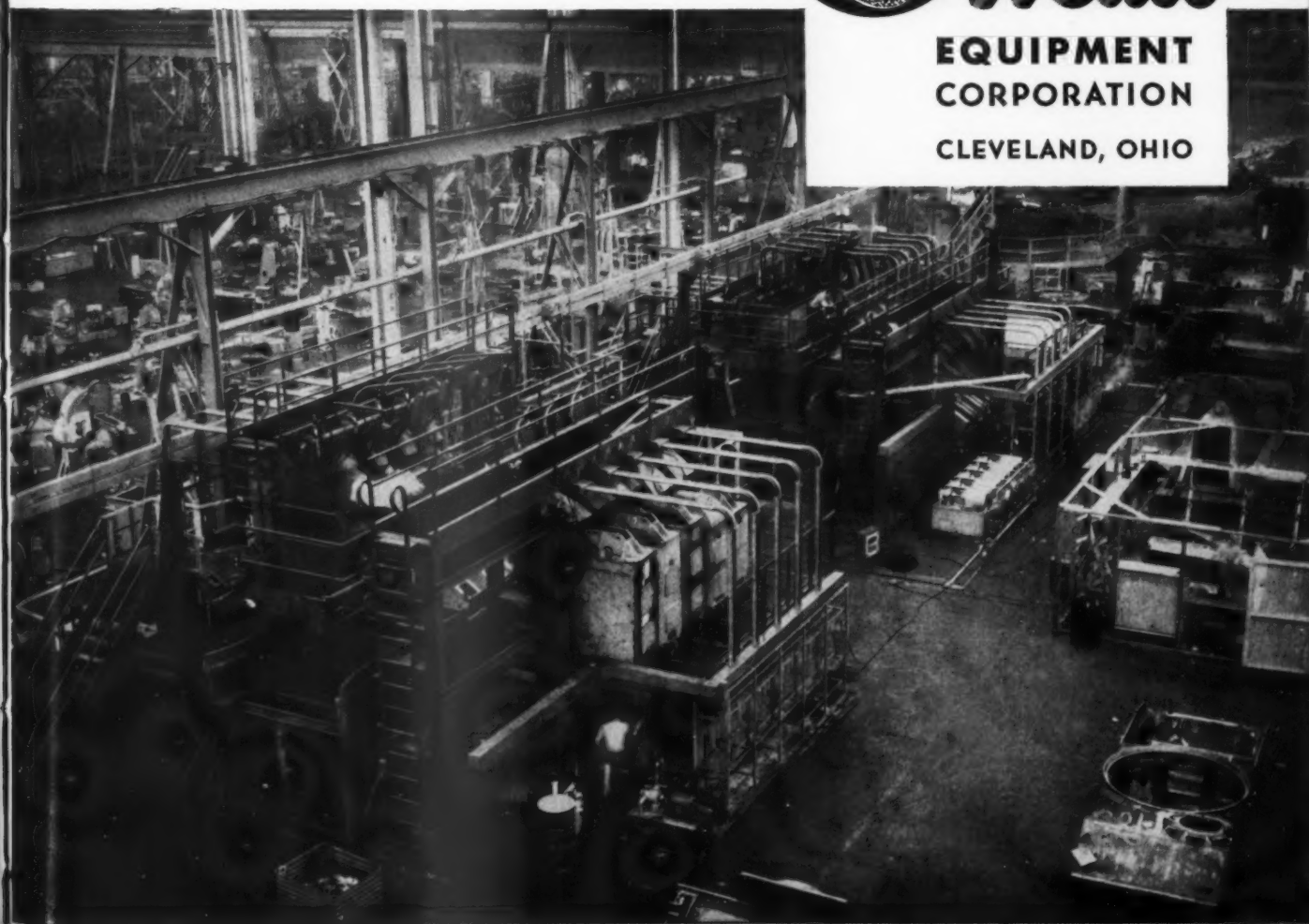
If you have a production problem — why not call on Wean Equipment and get results.



Wean

**EQUIPMENT
CORPORATION**

CLEVELAND, OHIO



now . . . another New Process
SERVICE to ENAMELERS

central source of supply for cast iron enameling



**RANGE
GRATES**



**RANGE
BURNERS**

SERVICE-TO ENAMELERS tells in three words the story behind the growth of New Process D-Enameling Corporation. Management and production people alike have learned that D-Enameling is a profit maker—worth far more than the negligible effort involved in putting the damaged parts aside for shipment by truck or rail to our plant.

Now, New Process launches another special SERVICE TO ENAMELERS . . . wet process cast iron enameling! Now, New Process becomes a central source of supply with large volume-low cost production for this special work which relieves range plants from the nuisance of having to run these parts on a special shift. You'll be surprised how economically we can enamel grates, burners and other cast iron parts for you. Won't you give us the opportunity to quote?

New Process D-Enameling Corp.

Highland and New Haven Avenues • Aurora, Illinois

THESE INDUSTRY LEADERS KNOW FROM EXPERIENCE THAT D-ENAMELING TRANSFORMS SCRAP LOSS INTO PROFIT DOLLARS



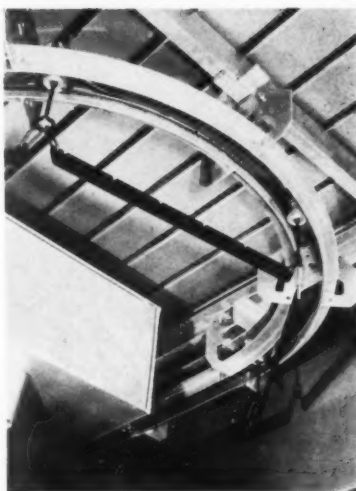
THE CAUSTIC BATH

ARROW SIGN CO. • BRIGGS MANUFACTURING COMPANY • CAPITAL AIR-
LINES • CHALLENGE STAMPING & PORCELAIN CO. • CLEVELAND-TENNESSEE
ENAMEL COMPANY • CLYDE PORCELAIN STEEL DIV. • CONLON-MOORE COR-
PORATION • CRIBBEN AND SEXTON COMPANY • CROWN STOVE WORKS •
DWYER PRODUCTS CORPORATION • ESTATE HEATROLA DIVISION • FLORENCE
STOVE COMPANY, Kankakee • GENERAL PORCELAIN ENAMELING AND MANU-
FACTURING COMPANY • GIBSON REFRIGERATOR COMPANY • GLOBE AMERI-
CAN CORPORATION • GRAY & DUDLEY CO. • ICE COOLING APPLIANCE
CORPORATION • LAWDALE ENAMELING CO. • A. J. LINDEMANN & HOVERSON
COMPANY • MAGIC CHEF INC. • MALLEABLE IRON RANGE COMPANY • MAYTAG
CO. • MURRAY CORP., Scranton • NORGE DIVISION, Effingham • NORGE DIVI-
SION, Muskegon Heights • PRENTISS WABERS PRODUCTS CO. • GEO. D. ROPER
CORPORATION • RHEEM MANUFACTURING CO. • SAMUEL STAMPING & ENAMEL-
ING CO. • A. O. SMITH CO. • THE ENAMEL PRODUCTS COMPANY • THOR
CORPORATION • TYLER FIXTURE CORPORATION, Waxahachie.

rigid connector rods themselves need no lubrication.

Conveyor speed can be regulated from 10 to 25 feet per minute, and load capacities range up to 100 pounds per foot of conveyor line. Trolleys are normally spaced at two-foot centers, but can be spaced either closer or farther apart.

Right: Photo shows end mounting of conveyor loop inside oven—permitting expansion and contraction. Load bars are connected to eyebolts suspended from the trolley by means of one or two links, giving flexible action on both vertical and horizontal curves.



Metal stampers hold technical meeting

(Continued from Page 54)

Titanium forming

O. A. Wheelon, consultant, Verson Allsteel Press Co., described recent developments concerned with titanium metal which "has developed more rapidly than economics justify". He cited the current market price for titanium as about \$22 per lb.

Best results in working titanium comes when straight fabrication work and stretch forming is done at room

temperature, and hydro press work at metal temperature of 6-800°F.

Wheelon also pointed up the "corrosion resistant characteristics of the metal which will undoubtedly make it useful in other products besides aircraft."

Plastic tooling

R. A. Bogart, sales manager, The Marblette Corp., said that the use of

plastic materials has grown rapidly in the field of prototype dies. He said that in short run production work, much time and money can be saved by utilizing plastic dies.

Plastic dies can be used as duplicate master models, as well as for drawing test panels.

Progress in this field was reported as being very rapid with the result that more plastic production dies were made in 1954 than in all previous years.

Metallizing

The technical session was closed with a color sound movie on "Metallizing". The movie presented details on the importance of metallizing in salvage work on costly production tools where work surfaces can be rebuilt. Another important usage is as a "maintenance coating" for bridges and other heavy gauge steel products. It was shown that metallized surfaces will protect metal surfaces from corrosion for years.

Cold extrusion

James M. Leake, president, The Leake Stamping Co., brought the metal stampers up to date on recent improvements in the field of cold extrusion. (*Read "Cold Extrusion Marches On", by Mr. Leake, starting on page 27.*)

Production of room air conditioners

(Continued from Page 37)

hooked up. All connections to the terminal block are accomplished with snap-in type lugs. After all push-button connections and all other electrical connections are made, the Air Conditioner is given a final electrical check. Finally, the completed and tested chassis is slipped into the steel outer cabinet which has been weather-proofed and lacquered.

Packaging operations

In preparing the unit for shipment, the skid base for the outer corrugated container is bolted to the base frame. A separate carton containing the complete window mounting accessories, inner cabinet and aluminum filters is fitted snugly against the rear

of the unit. A protective sheet of wax paper separates the accessory carton and the air conditioner itself.

Then, the top corrugated container is slipped into position, and its top is stapled into place. Two bands of strong wire are tensioned lengthwise around the container. At the end of the roller conveyor, a special hoist stacks the packaged units three high for delivery by fork truck to the loading dock. Here, the air conditioners meet other air treatment appliances such as air circulators, fans, dehumidifiers, heaters and humidifiers coming off their production lines.

Now the Fresh'nd-Aire push-button automatic air conditioners begin another journey to some American

home, hotel, office or motel to help the occupants enjoy more comfortable living.

EEL conference

→ *from Page 62*

lows: 17,000,000 refrigerators, 4,500,000 dryers, 9,000,000 ranges, 20,000,000 toasters, 35,000,000 television sets, and 35,000,000 clocks.

Jewell said the estimated additional electrical load, required by the use of 428,000,000 new appliances, would be about twenty million kilowatts. The new appliances and the energy required to operate them represents 3½ billion dollars worth of apparatus alone, and field labor necessary to install it. This means a lot of business—but only if the problem of adequate wiring is solved, he added.

SPRA-CON automatic paint applicators

*Serve these
important
companies*

Maytag

Westinghouse

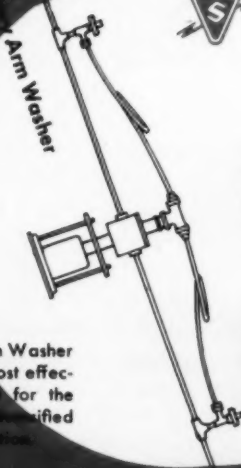
 SYLVANIA

Oasis

Deepfreeze

America's leading washers and dryers
ABC

Laundry Queen



The new Spray-Con Rotary Arm Washer has been proved to be the most effective and economical method for the continuous cleaning of many diversified metal parts in volume production.

Write for case history information and the names of companies using Spray-Con Equipment in your field.

The SPRA-CON COMPANY

ENGINEERS AND MANUFACTURERS OF WASHERS, OVENS, AUTOMATIC PAINT APPLICATORS

INTERNATIONAL HARVESTER COMPANY
EVANSVILLE WORKS



America's Finest

THE NATIONAL RADIATOR COMPANY

Whirlpool

STEEL
Craft

TROY

Hotpoint

SEND FOR THIS FREE BOOKLET



- These familiar trade marks represent some of the many quality and cost-conscious manufacturers who are using the Spra-Con Automatic Paint Applicator to improve their product finishes and to materially decrease application costs.

You, too, can improve the quality of your finished products and *save thousands of dollars in production costs* by changing to the *Modern* method of prime coat* application.

These advantages will be yours:

1. Lowered paint consumption.
2. Reduced "in-process" paint.
3. Uniform coating thickness.
4. Reduced air makeup.
5. Reduced manpower requirements.
6. Reduced maintenance.
7. Eliminates compressed air.
8. Eliminates water consumption.

These and many other less tangible advantages add up to *better quality at lower cost.*

An automatic paint applicator can pay for itself in one year's time.

*On many products, the Automatic Paint Applicator can be used for finish coat work also.

3600 ELSTON AVENUE • CHICAGO 18, ILLINOIS

CONVEYORS, AND EQUIPMENT FOR COMPLETE PAINT FINISHING SYSTEMS

1920



1955

A business grown big through SERVICE



936

Ferro pioneers promotion of Porcelain enamel with national advertising in Fortune, other publications.

1955

Ferro's current campaign in The Saturday Evening Post is reminding millions that "Nothing but Porcelain Wipes NEW. Always!"



FERRO CORPORATION

Cleveland • Nashville • Los Angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

Cold extrusion . . .

→ from Page 28

Raw materials had to be tested under every combination of circumstances and the results classified in order that optimum conditions may be known and maximum results be attained. In this manner one may know the probable physicals that may be expected from the various usable grades of steel under comparable degrees of deformation and reduction.

The constant research conducted by the manufacturers of lubricants has led to overcoming friction in the extrusion process, which is one of the most formidable obstacles in the path of forward progress. Naturally the lubricants found to be most successful in extruding non-ferrous metals were totally inadequate in handling the sharply increased pressures required in the case of steel.

Following the emphasis in the beginning on the cold extrusion of steel shell cases came the commercial application of the process to other round cylindrical products. Since then, parts having other shapes are making their appearance with increasing regularity, although they are somewhat less predictable in advance without experimental research.

Considerations

We all know that in using round blanked slugs we lose about 25% of the material in unused corners and material between blanks. We also know that tolerance variations in plate thickness may amount to as much as 10% which in itself presents a threat to the capacity limitations of a closed die.

Therefore the trend has been toward the use of round bars as a source for slugs. Smaller bars may

be die cut although the slug may be deformed in the process in which case the slug may have to be sized so that it may be squared up for accurate piercing to follow. This sizing may be accomplished with but little work-hardening.

Larger slugs may be sawed from bar stock. Close attention to the bar diameter may be controlled by a vernier adjusted gage which provides great uniformity of the ultimate slug weight. Production sawing is a new addition to the operations allied to the stamping industry and can only be made economically efficient if the setup provides four or five machines for each saw operator.

Generally speaking, steel tube parts cannot normally be made as economically as by prevailing methods. But when the finished part has one end closed, the scales are definitely tipped in favor of cold extrusion, and when the part requires a hub or a center post, you hit the jackpot in more ways than one, for in addition to monetary considerations, the maximum deformation causes an interlocking of its fibrous structure that materially increases its physical strength.

Steel is under tension in a drawing operation and may tear under adverse conditions. Steel is under compression in extrusion and will withstand a far greater transformation with ill effect. Under the most favorable conditions the cross sectional area of a part may be reduced up to 80% and even 85% in the first reduction. Secondary reductions may proceed at the rate of 40% to 45% until the steel approaches 60 Rockwell "B". At that point, if much more remains to be done, it may be well to anneal the part before proceeding any further.

Industry responsibilities in assuring a bright future for porcelain enamel

(Continued from Page 46)

will provide measurement of the various segments of the industry. In that way the diminishing and expanding areas can be readily recognized to properly guide further programs. This is an area where our industry is weak and competition is strong.

We should recognize that only strong profit-minded businesses can carry out our responsibilities. Weak "under-nourished" businesses cannot afford to carry on such activities. Without proper profits there is no ability to merchandise constructive-

MAY • 1955 finish

1920



1955

A business grown big through SERVICE

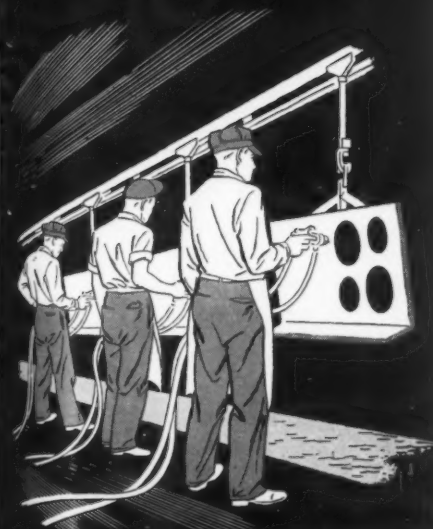


1938

Ferro introduces Stabilite, first successful stabilizer of color on multiple-coat Porcelain enamels.

1955

Ferro development of Titanium frits minimizes need for multiple cover coats.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

ly — and, without constructive merchandising, porcelain enamel could start to slide regardless of the new markets which are just over the horizon.

With the bright future ahead for the porcelain enamel industry . . . with the new products, processes and

Porcelain Enamel Institute

Membership: The Porcelain Enamel Institute is composed of 125 member companies representing suppliers of basic materials and equipment and processors of these materials.

Purpose: To help promote the use of porcelain enamel finish—to seek new markets and fields—to help and aid industry in its best possible use.

Operating divisions: Steel, Aluminum, Color Oxide, General Enameling, Architectural, Frit Manufacturers, Steel Plumbing Fixtures, Sign.

Active working committees: Market Development, New Uses, Quality Development, Commercial Research, Process Development, Shop Practice Forum Program.

National Safe Transit Section: The work of this group is national in scope and has had rapid and steady growth since it was launched in 1948. Over 185 manufacturing companies are certified to date under this group.

equipment in the development and testing stage . . . and with the promotional and educational programs in progress and contemplated—I know that industry will meet these responsibilities.

We must do it and will do it. We all have a part in this job—the frit supplier, the metal supplier and the porcelain enamel plant operator.

FEB. GAS WATER HEATER

SHIPMENTS SET NEW RECORDS

Automatic gas water heater shipments for February hit an all-time high of 218,500 units—the highest total for any month in four years—according to the Gas Appliance Manufacturers Association.

Edward R. Martin, director of marketing and statistics, reported that this was 24.0% over February, 1954.

Martin added that confirmed shipments for January have caused figures to be revised upward to 200,000, for a 21.7% increase over January 1954.

1920



1955

A business grown big through SERVICE



1938

Ferro publishes first complete manual on Porcelain enameling.

1955

Ferro's "How to" books are required reading in most P.E. technical schools.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

PHILCO'S ROASTMETER...

Another

KS

Customer Cooperative

ACHIEVEMENT



Philco's new Roastmeter electric range, an outstanding advance in automatic cooking, is another achievement of K-S Research in cooperation with the engineering staff of its customer.

Philco had been working on the device which would keep the cook continuously informed of the progress of the roasting process without having to open the oven door or stoop down to peer into a hot oven.

The problem involved the design of a suitable sensing element or probe for the meat and the electrical transmission of actual inside meat temperature to an indicator on the range control panel.

It was in resolving this problem that K-S helped Philco in the final design of the Roastmeter.

The materials selected for the probe assembly provide for a maximum operating temperature of 500° F.

The transmission and indicating elements compensate automatically for fluctuations in input line voltage and for ambient temperature variations up to 200° F.

When you standardize on K-S indicating and control equipment, you increase the sales appeal of your product and you build customer good will. K-S engineers are always available for information and suggestions.

KING-SEELEY CORPORATION

ANN ARBOR, MICHIGAN



Program for appliance technical conference

sixth annual conference to be held in Cleveland, Ohio, May 23 and 24

THE 6th Appliance Technical Conference will be held at the Hollenden Hotel, Cleveland, Ohio, May 23 and 24. The event is sponsored annually by the Subcommittee on Domestic Appliances of the American Institute of Electrical Engineers.

The tentative program, as announced by B. F. Parr (Westinghouse), and chairman of the AIEE Subcommittee on Domestic Appliances, is as follows:

Monday morning, May 23

"Welcome to Cleveland" — John H. Fuller, Reliance Electric & Engineering Co.; chairman, Cleveland Section

"A Look at the Future" — keynote address — R. J. Sargent, manager of major appliances, Westinghouse Electric Corp.

"Kitchen Layout Studies" — Prof. Glenn Beyer, director, Housing Research Center, Cornell University
"The Cornell Kitchen" — movie presented by Prof. Beyer

"Installation and Service Considerations in Built-In Appliances" — E. H. McNiece, Detroit Edison Co.

Monday afternoon, May 23

"The Homemaker's Viewpoint on Built-In Kitchens" — Helen Kendall, director, appliances and home care, Good Housekeeping Magazine

Symposium — "Trends in Appliance Design with Emphasis on Built-In Equipment" — Helen Kendall and a panel representing three manufacturers, a design firm, and a utility company

"The Magic Link" — an adequate wiring movie presented by Consolidated Edison of New York

Tuesday morning, May 24

"The Effect of the Built-In Appliance Trend on Design and Installation" — John H. Robinson, Jr., General Electric Co.

"A Proposed Small Appliance Center" — K. B. Smith, Globe American Corp.

"Aluminum in Appliances" — Paul Brandt, Reynolds Metals Corp.

"General Electric Major Appliance Color" — E. W. Harrison, General Electric Co.

Tuesday afternoon, May 24

"Statistical Methods Applied to Automatic Washer Tests" — C. H. Fuchs, Westinghouse Electric Corp.

"Flash Type Steam Iron Design" — B. B. Krammes, The Hoover Company

"Surface Emissivity as a Design Factor in Appliances" — A. D. Smith, Westinghouse Electric Corp.

diagnosis:

*too much drying
time — at
too high a cost!*

remedy:

**Install a Fostoria
Radiant Oven!**

Unlike convection ovens, infrared rays heat your product instantly. No costly "warm-up." And Fostoria Gold-Reflector Ovens direct 98% of the rays on the product. Production savings. Product improvement. Both are yours with Fostoria. Contact a Fostoria distributor or write us direct.



case history:

Drying time reduced 140% • Quality improved!

COIL SPRINGS: The same quantity of black japanned springs is now being baked in Fostoria radiant oven in 10 hours that previously took 24 by another method at the U. S. Steel Wire Spring Co. A less expensive grade of japan is now used, but a higher quality finish is apparent with Fostoria baking. Fostoria Ovens can bake, heat, or dry your product faster — on less floor space. Ovens cost less to buy — pay for themselves in months. If you heat, bake or dry, there is a profitable application for Fostoria Radiant Ovens in your plant.



Send for your free copy of
"APPLICATIONS UNLIMITED"

The Fostoria Pressed Steel Corporation
Dept. 520, Fostoria, Ohio

A NEW ERA IN L



Kings Mountain, N. C. (left), where Foote is mining and processing large deposits of spodumene which are shipped to Sunbright, Va. (right), the world's largest lithium chemical plant.

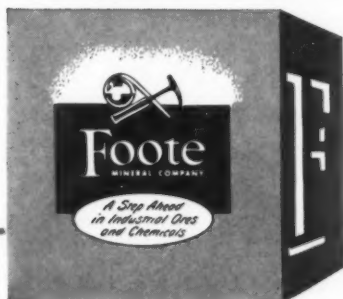
Start with **Foote**

Lithium Hydroxide

Lithium

... for the first time in over three years you can count on an assured, abundant supply of Foote lithium—a supply that can be depended upon for many years to come—a supply of Foote lithium that can meet every demand of the lubricating grease, ceramic and many other industries that have had to travel “lean” for the past few years—and, in addition, a supply that can satisfy the dozens of projects that have been held back pending this new day of abundance.

Foote has created, and offers to industry... a new era in lithium.



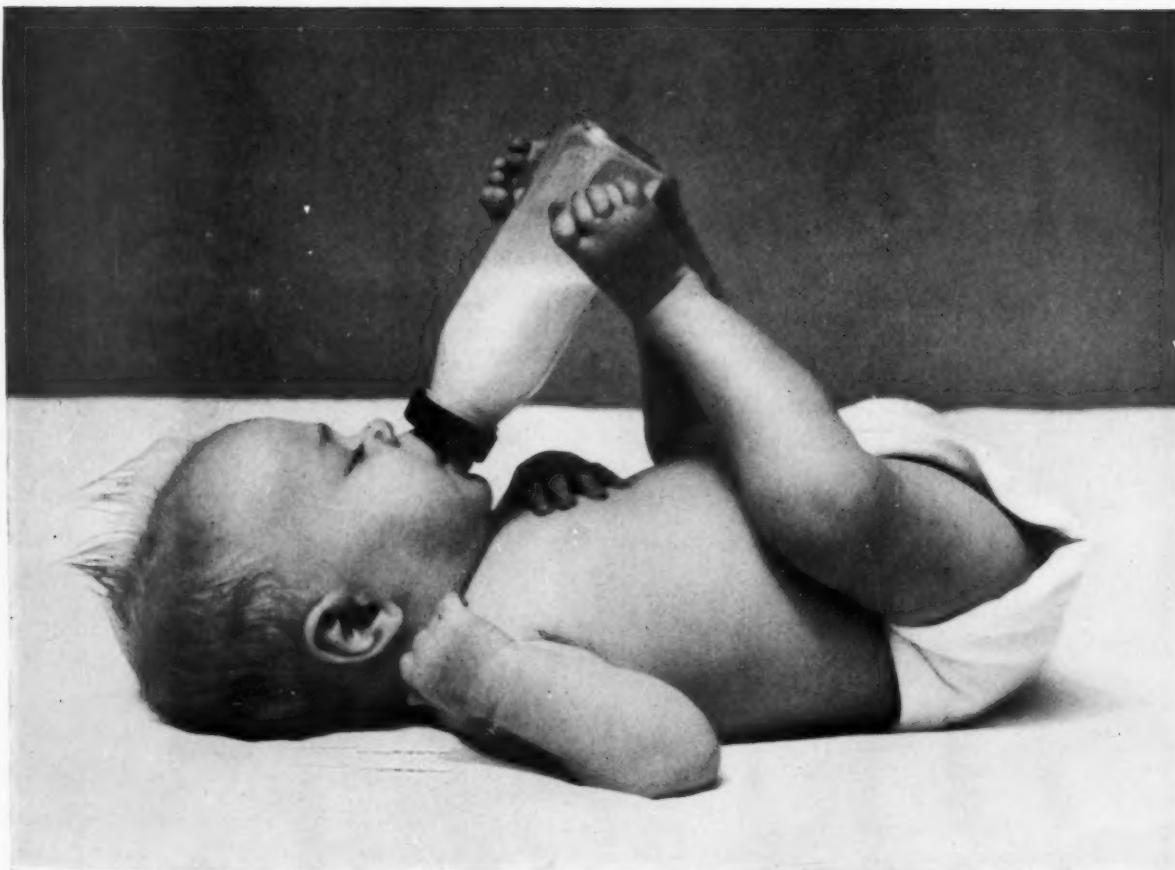
This new era of assured lithium supply presages a new era of technological advances in industry. Now is the time to implement your planned uses of Foote lithium—with the confidence that the chemically unique properties, and economically sound values of lithium are the bases on which to build new and improved products and processes. Foote is the place to start.

Foote offers to industry a thorough background of over 25 years of intensive research and development experience with lithium. You are invited to draw on this experience to supplement your own lithium program.

FOOTE MINERAL COMPANY

412 Eighteen W. Chelton Bldg., Philadelphia 44, Pa.
RESEARCH LABORATORIES: Berwyn, Pa.
PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.

finish MAY • 1955



results

Nothing is so productive of end results as open-minded thinking and objective experimentation in the beginning.

Combine these factors with laboratory and field evaluation, controlled processing, helpful assistance; they are all a part of "PEMCO PRODUCTS"



PEMCO

CORPORATION • BALTIMORE 24, MARYLAND

Manufacturers of "The World's Finest" Porcelain Enamel Frits, Coloring Oxides, Screening Pastes, Glaze Frits, Body and Glaze Stains, Underglaze and Overglaze Colors, Vitriifiable Glass Colors.

NEWS

SERVEL NAMES MESSICK MGR. MANUFACTURING ENGINEERING

Walker A. Messick has been promoted to manager of manufacturing engineering at Servel, Inc., Evansville, Ind., according to John H. Wall, vice president and general manager of the home appliance division.

Messick joined Servel in 1947 as equipment supervisor and for the past three years has been general supervisor of shop engineering in the wing division.

MAGIC CHEF NAMES WILLIAMS

Edward J. Williams, formerly controller and treasurer of Laclede-Christy Co., has been named controller and assistant secretary of Magic Chef, Inc., St. Louis, Mo., it has been announced by James A. Marohn, vice president of finance and treasurer of Magic Chef.

Williams succeeds Harold H. Gearhart, who has become budget and cost director.

DEEPFREEZE'S DUGGAN RESIGNS, RUMORS OF DIV. SALE DENIED

F. F. Duggan has resigned as vice president and general manager of Deepfreeze Appliance Div., Motor Products Corp., it has been announced by A. L. Lott, Motor Products' chairman.

Duggan was general sales manager of Deepfreeze from 1945 through 1949. He joined Avco Mfg. Corp. as

general sales manager of American Kitchens Div. and later as general sales manager of major appliances, Crosley Div. He joined Deepfreeze again in 1953 as vice president and general manager.

A company spokesman has labeled rumors that Motor Products is negotiating the sale of Deepfreeze as "entirely false".

NORGE 2-MONTH '55 SALES TRIPLE THOSE OF '54 PERIOD

Factory sales of Norge appliances in January and February tripled those of the corresponding 1954 period, according to Judson S. Sayre, president, Norge Div., Borg-Warner Corp., Chicago.

February was the second best month in the company's history, topped only by January's \$15,100,000 sales.

WHIRLPOOL NAMES CHAMPION

Robert Champion has been appointed west central regional sales manager, Whirlpool Corp., St. Joseph, Mich., replacing L. L. Frank, deceased, it has been announced by Jack D. Sparks, sales manager.

WELDING SHOW REGISTRATION LARGEST IN HISTORY

The largest advance registration for any American Welding Society event has been reported by J. H. Humberstone, president, for the Na-

tional Spring Meeting and concurrent Welding Show, to be held at Kansas City, Mo., June 7-10.

The show will be the largest in its history in the number and variety of exhibits.

The Spring Meeting sessions will be held at the Hotel Muehlebach and the exposition at the Kansas City Auditorium.

LENNOX TOOLING PROGRAM

A \$250,000 tooling program for the Syracuse plant of the Lennox Furnace Co. has been announced by H. G. Krayenhof, general manager of the Syracuse division.

The program is designed for the production of new lines of Lennox gas-fired heating and air-conditioned equipment.

HOWELL TO CROSLY-BENDIX AS V. P. & GENERAL MANAGER

F. E. Howell has been named a vice president at the Crosley and



Bendix Home Appliances Divisions of Avco Mfg. Corp. and general manager of appliances.

He has been in appliance sales and management for 20 years. He has previously been employed by Frigidaire Div., General Motors Corp., and Nash-Kelvinator.

SHIGLEY TO COLEMAN

Harold E. Shigley has been named product stylist for The Coleman Co., Wichita, Kansas.

DAVIS TO ASTE COMMITTEE

D. J. Davis, vice president-manufacturing, Ford Motor Co., has been elected to membership in the American Society of Tool Engineers Research Fund Committee.

CROSLEY-BENDIX NAMES SMITH

Joseph B. Smith, formerly public relations manager in charge of communications and publicity, has been named director of public relations,

Crosley-Bendix Home Appliance Div., Avco Mfg. Corp., Cincinnati, Ohio.

FEB. VACUUM CLEANER SALES

32% OVER FEB. 1954

Factory sales of standard-size vacuum cleaners in February totalled 262,651 units, or 5% over 250,123 sold in January and 32% over February 1954, according to the Vacuum Cleaners Manufacturers' Association.

MAYTAG'S 9 MILLIONTH WASHER

The 9 millionth Maytag washer, an automatic model, has come off the assembly lines at Maytag's Plant 2 washer and dryer plant.

GAMA ACCEPTS COAST MEMBER

Cam-Stat, Inc., Los Angeles, Cal., a manufacturer of controls, has been accepted as a member by the Gas Appliance Manufacturers Association, according to managing director H. Leigh Whitelaw.

This addition increases the total to 596 member companies.

AMER. KITCHENS NAMES STEVENS

Michael H. Stevens, former Seattle district sales manager, has been named to the newly created post of export sales manager, American Kitchens Div., Avco Mfg. Corp., it has been announced by C. Fred Hastings, general sales manager, American Kitchens.

HOYER TO RHEEM AS AIR CONDITIONING PRODUCT MGR.

James L. Hoyer is the newly appointed national product manager in



charge of air conditioning, Rheem Mfg. Co., Chicago, it has been announced by Vearl J. Heinis, general sales manager.

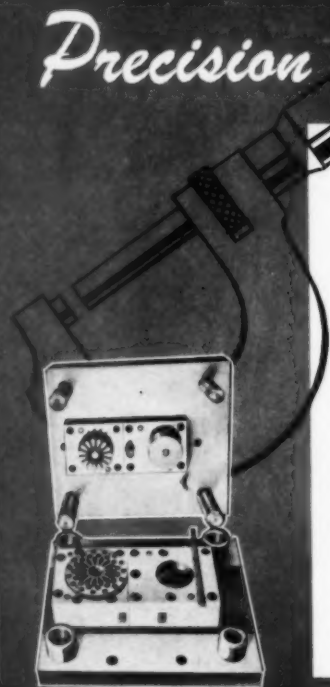
Prior to joining Rheem, Hoyer was principal in the firm, James L. Hoyer & Associates, Washington, D.C., consulting engineers specializing in residential air conditioning.

MAY • 1955 finish

NEW MONARCH

Precision

DIES



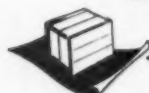
Designed and engineered in our own die and tool plant.

By producing our own dies, tools, jigs and fixtures, not only do we obtain a better, more efficient and more economical production line, but we assure ourselves of prompt delivery to the various departments which together make up our Complete Manufacturing Service.

For a dependable, highly qualified source of stampings or completely assembled products, New Monarch has, in its 3 modern plants, the necessary equipment and the skilled craftsmen to enable us to meet all of your requirements.

Send blueprints for estimate.

A complete manufacturing service from blueprint to shipping carton . . .



When in need of stampings, see



Dies, tools, stampings, assembly, finishing and packing—whether it be a single stamping or a complete from-blueprint-to-shipping-carton job, ask New Monarch to bid on your work.

NEW MONARCH MACHINE & STAMPING CO.
406 S. W. NINTH ST. DES MOINES, IOWA



**NEW AND MODERN
CERAMIC DEVELOPMENTS
in Products and Procedures**

The O. Hommel Co. has devoted many years to continued progress with accumulated experience and the training of OHCO service engineers and laboratory experts. All Hommel personnel are cost and quality minded . . . production trained . . . shrewd analysts of existing problems in the ceramic industry. With Hommel ceramic supplies, you are always assured of quality control, the basis for successful and profitable production, and the benefits of Hommel's years of practical shop experience and research is yours for the asking. Today, as always, Hommel offers the finest in plant, office, laboratory and warehouse facilities. The completeness of Hommel's inventory makes it unnecessary to have more than one supplier!



PROMPT SHIPMENT



EXPERT ENGINEERING

Take advantage of the vast ceramic production facilities and "know-how" Hommel can place at your disposal . . . showing you many short cuts to quality production . . . saving you many production headaches.

Write Us Today!



Sales representatives throughout the world

THE O. HOMMEL CO.

PITTSBURGH 30, PA.

"The World's Most Complete Ceramic Supplier"

**POTTERY • STEEL AND CAST IRON FRIT
CERAMIC COLORS • CHEMICALS • SUPPLIES**

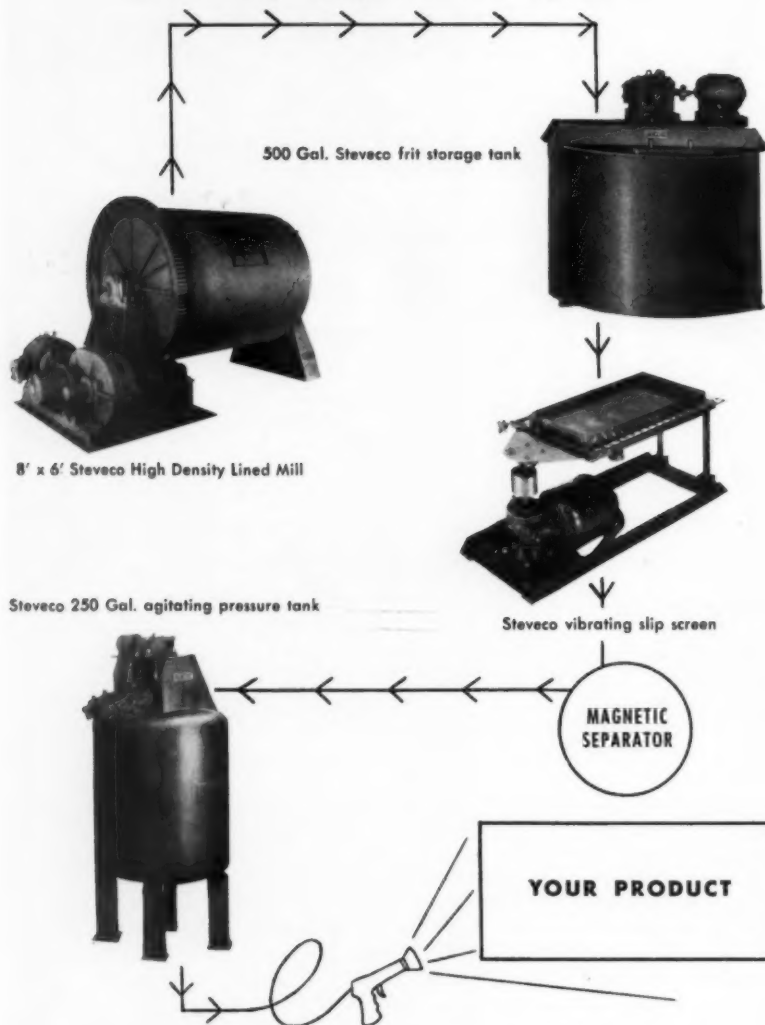
Our Technical Staff and Samples are available to you without obligation. Let us help with your problems.

West Coast Warehouse, Laboratory and Office, 4747 E. 49th Street, Los Angeles, California



STEVECO

High Efficiency Porcelain Enamel Processing Equipment and Systems



Builders of grinding, mixing, agitating and blending equipment for the Ceramic and Process Industries for over a century and today one of the Industry's main process equipment suppliers.

Steveco supplies the units required by porcelain enameling operators as suggested by the accompanying flow chart and also engineers and manufactures large production equipment used in multi-unit systems.

No matter how modest or how extensive your mixing, agitating and grinding requirement, contact



THE STEVENSON COMPANY
225 N. Wilkinson St. • Dayton, Ohio
Plant: Wellsville, Ohio
Sales Representatives in Principal Cities

AHLMA IRONER COMMITTEE

Promotion ideas were discussed and steps taken for study of the market situation at a meeting of The Ironer Committee of the American Home Laundry Manufacturers' Association. Members of the Committee are: Joseph Groshans, Speed Queen Corp., Algonquin, Ill.; Bernard J. Hank, Conlon Corp., Chicago; Robert E. McDonald, Speed Queen Corp., Ripon, Wis.; Lee E. Clancy, Ironrite, Inc., Mt. Clemens, Mich. and Guenther Baumgart, AHLMA's executive director.

WALSH METAL NAMES BARTON ENGINEERING SUPERVISOR

Graham Barton has been appointed supervisor of engineering, Walsh



Metal Products, division of the Michigan Oven Co., it has been announced by A. C. Towne, Jr., president.

All engineering guidance for Walsh will be assumed by Barton, who has worked in drafting, purchasing, field supervision and engineering for Michigan Oven.

NEMA MEMBERSHIP INCREASES

Seven manufacturers have been admitted to membership in the National Electrical Manufacturers Association, announced A. F. Metz, NEMA president.

Their election increases membership to 571.

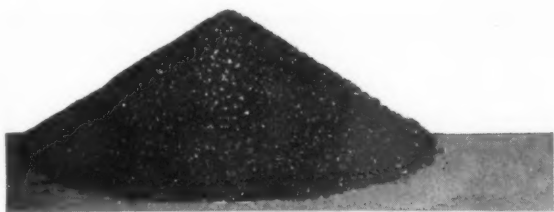
The new members are: Continental X-Ray Corp., Chicago; The Dobeck-

MAY • 1955 finish

Try Century Vit



GROUND COAT



"Start right from the Steel out" is more than a slogan — it represents a policy and belief at Century that without an easy-working, trouble-free ground coat with good adherence or "Grip" no finish can give trouble-free service for the life of the product.

The millions of pounds of Century ground coat frit that are used every year by our customers give extra assurance of trouble-free finishes, both in the shop and on the finished product.

Century time-proved frits "put dollars in your pockets" too. They are priced right to start and there are "in plant" savings that count up fast.

If you haven't tried this economical, trouble-free enamel, contact us and we'll see that you have the opportunity.

An experienced field staff serves the plants of all Century customers. Phone PORTsmouth 7-7260.



CENTURY VITREOUS ENAMEL COMPANY

6641-61 S. Narragansett Ave., Chicago 38, Ill.

mun Co., Cleveland; Electrovector, Inc., Brooklyn, N. Y.; Globe American Corp., Kokomo, Ind.; Kaiser Aluminum & Chemical Sales, Inc., Chicago; The J. P. Lewis Co., Beaver Falls, N. Y.; and Rea Magnet Wire Co., Fort Wayne, Ind.

New members in NEMA'S Wire & Cable Section increased membership to 39.

They are: Kaiser Aluminum & Chemical Sales, Inc.; Rea Magnet Wire Co.; American Steel & Wire Div., U. S. Steel Corp., Cleveland, Ohio; Narragansett Wire Co., Pawtucket, R. I.; and Walker Brothers, Conshohocken, Pa.

NORGE NAMES FISHER

Appointment of Walter C. Fisher to the new position of field sales manager, Norge Div., Borg-Warner Corp., Chicago, has been announced by R. C. Connell, vice president of sales.

Fisher will be responsible for all field activities, coordinating sales programs between Norge and distributors.

DAY & NIGHT NAMES HULL

The appointment of Louis M. Hull as manager of new construction sales for the Day & Night Div., Carrier Corp., Monrovia, Calif., has been announced by general manager William J. Bailey, Jr.

WHIRLPOOL'S EVANS HEADS CONVERTING AT MARION PLANT

Glenn Evans has been appointed to head the task force that will convert the Marion, Ohio, plant, recently purchased by Whirlpool Corp., St. Joseph, Mich., from Motor Products Corp., to the production of automatic clothes dryers, it has been announced by Donald W. Alexander, vice president in charge of operations for Whirlpool.

METHODS IMPROVEMENT CONTEST

Entries are being accepted for the Fifth Annual Methods Improvement Competition sponsored by the Industrial Management Society in conjunc-

tion with its 19th Annual National Time and Motion Study and Management Clinic scheduled for November 9-11, 1955, at the Hotel Sherman, Chicago.

EASTMEAD JOINS MAGIC CHEF

Louis D. Eastmead has been appointed manager of the southeastern division of Magic Chef, Inc., according to K. O. Dupree, general sales manager.

Eastmead was formerly manager of the Contract and Builder Department, Crosley-Bendix Div., Avco Mfg. Corp.

AHLMA FEB. SALES FIGURES

Factory sales of household laundry appliances in February totalled 470,670 units, compared to 481,385 in January, down 2.2% and an increase of 28.6% over February, 1954, according to Guenther Baumgart, executive director, American Home Laundry Manufacturers' Association.

Standard-size household washers sold in February amounted to 353,-

WE'RE MOVING!

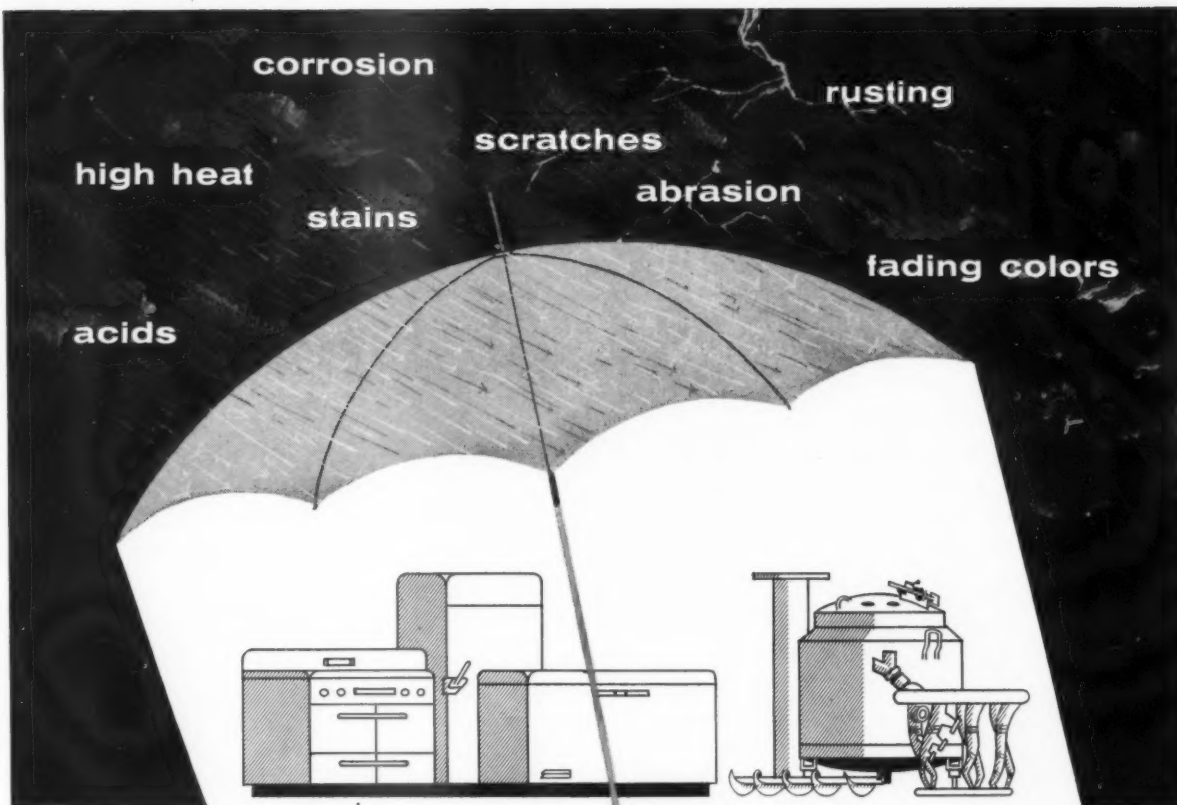
Here's our new address and telephone number

EFFECTIVE MAY 15th

HUYCK CONSTRUCTION COMPANY

1861 DeCook Avenue • Phone: TAlcott 3-0612

PARK RIDGE, ILLINOIS



PORCELAIN ENAMEL PROVIDES PROTECTION for Consumer and Industrial Products

Give your products this complete protection, and you make them *more salable!* Customers want attractive appearance and long service life in the products they buy—and with Porcelain Enamel, you can give your products these advantages in unequalled degree. No other protective surface matches Porcelain Enamel's colorful beauty and resistance to corrosion, abrasion, impact, ageing, weathering

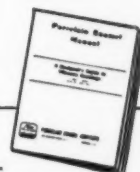
and high temperatures. This steel-strong, non-corrosive, completely inorganic material makes such products *most desirable!*

To help you check the possibilities of using Porcelain Enamel for your products, we have prepared an Engineering Handbook containing up-to-date design data. We'll be glad to send you a copy for reference and review.



PORCELAIN ENAMEL INSTITUTE, INC.

1346 Connecticut Avenue, N. W. • Washington 6, D. C.



PORCELAIN ENAMEL INSTITUTE, INC.

1346 Connecticut Ave., N. W., Washington 6, D. C.

Please send a copy of the PORCELAIN ENAMEL DESIGN MANUAL to:

Name

Company

Address

214 units, compared to 357,354 in January, down 1.2%, and 19.7% over February, 1954.

Automatic tumbler dryer sales in February totalled 109,215 units, compared to 115,383 in the preceding month, a decrease of 5.3%, and an increase of 74.8% over February, 1954.

Household ironers aggregated 8,241 units, a drop of 4.7% from 8,648 units sold in January and .4% up from February, 1954.

GAMA INDUSTRIAL DIVISION

ELECTS NEW MEMBERS

Two companies have been elected members of the Industrial Gas Equipment Div. of the Gas Appliance Manufacturers Association, according to James H. Sands, division chairman.

They are the Field Control Div., H. D. Conkey and Co., Mendota, Ill., and Charles A. Hones Co., Baldwin, Long Island.

This increases total membership to 31.

SHELDON TO WHIRLPOOL AS CERAMICS ENGINEER

R. S. Sheldon has joined Whirlpool Corp. as a ceramics engineer in



the research and development division, it has been announced by William E. Mahaffay, director of engineering. Sheldon will work on the development of porcelain enameling

material and processes, and will act as a consultant to designers of porcelain products.

He was formerly with Frigidaire Div., General Motors Corp., Dayton, Ohio.

WHIRLPOOL NAMES MINGES

Russell E. Minges has been appointed to the new position of supervisor economic analysis section of the market research department, Whirlpool Corp., St. Joseph, Mich., it has been announced by Robert Beckwith, manager of market research.

GORDON RESEARCH CONFERENCE

Solid State Studies in Ceramics will be the theme of the Gordon Research Conference, A.A.A.S., to be held at Kimball Union Academy, Meriden, New Hampshire, July 4-8, 1955, under the chairmanship of Dr. V. D. Frechette, New York State College of Ceramics, and vice chairman Dr. J. R. Johnson, Oak Ridge National Laboratory.

A SUGGESTION TO DESIGN ENGINEERS:

Sometimes it's better and cheaper in pressed steel!

BEFORE: This part, a casting, proved too weak and frequently broke as shown across one end.



AFTER: Nagel-Chase designed and produced this part of pressed steel,—stronger, less costly, no breakage!

When you, as design engineer, are faced with a problem of deciding the best, strongest and most economical way to make a certain part, it might pay you to consult Nagel-Chase. Experts for many years in the design and manufacture of pressed steel products, including many styles of Casters and V-Belt Pulleys used in the appliance industry, Nagel-Chase has frequently been able to produce a pressed steel design that was more satisfactory from both a performance and cost standpoint. The part illustrated is a typical example of how Nagel-Chase produced a part of pressed steel to replace a die casting that was breaking in operation. Consult Nagel-Chase for all your pressed steel needs, and for your caster and V-Belt requirements.

NAGEL-CHASE MANUFACTURING CO.

2811 N. Ashland Ave.

Chicago, Illinois

MANUFACTURERS OF NAGEL-CHASE CASTERS AND V-BELT PULLEYS

Alloy Rings

cut Brazing Rejects
to less than 1% in
Refrigerator Compressor
Dome Assembly



* Actual photo of refrigerator plant production line where 11 joints are brazed on one assembly with less than 1% rejected under Underwriter's pressure test of 1500 lbs. per sq. in.

Alloy brazing materials insure a perfect job every time . . . consistently uniform, trouble-free brazing with no rejects . . . no reworking!

No question about it—Production Brazing with Alloy Rings is the practical answer to many expensive metal joining problems. Investigate . . . production brazing can help you conquer those sky-high production costs.

Precision is of the utmost importance in successful brazing. For infallible results insist on precision-made Alloy Rings. Special Alloy packaging methods speed production and cut waste to a minimum.


Write for full information on brazing rings, preformed shapes, silver alloy, copper, soft solder and flux.


Alloy RINGS

ALLOY RING SERVICE, INC. • 1079 EAST 52ND STREET
INDIANAPOLIS 5, INDIANA


finish MAY • 1955

TICKETS TO ONE SOURCE







No. 2230




No. L-40-A



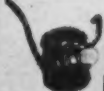
No. M-322-A




No. 490




No. 240-L




No. 1903-B




No. 340-T




No. 9209




No. 1885




No. L-22-E




No. 9316



Special Harnesses



No. L-52-P



No wasted time traveling Circle F. Consultation service for your wiring device needs on any appliance on request. For card sets call EASTERN INS. WIRE CORP., Wallingford, Conn.
Subsidiary of:
CIRCLE F MFG. CO.
TRENTON 4, NEW JERSEY

Nothing but porcelain
wipes **new...always!**



Won't scratch because it **can't** scratch! Genuine Porcelain enamel is actually **glass** fused right into the metal. You can scrub it, write on it, try to burn it...and **nothing** happens.



Won't rust because it **can't** rust! Porcelain enamel provides lifetime protection for metals because it's a **permanent** surface. Can't possibly blister or peel. Adds extra value to any product.



Won't discolor because it **can't** discolor! Even the **colors** in porcelain enamel are inorganic, unaffected by time, heat or moisture. Another reason why it's used for practically all household ranges and many other fine appliances!

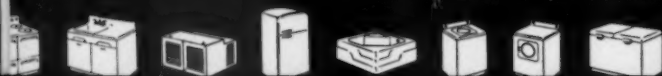
FERRERO CORPORATION

Developers of
today's finer Porcelain enamels

CLEVELAND • NASHVILLE • LOS ANGELES • 11 foreign countries



"A BETTER BUY"
says this label



nothing but
nothing
nothing but
wipes **NEW.**

Porcelain enamel stays *new* for years, adds extra value to any household appliance. That's why more and more "Porcelain" is being used—both *inside* and *out*—on such things as washers and driers, refrigerators and home freezers, room conditioners, dehumidifiers, incinerators, and numerous other products going into the home.

And the many *natural* advantages of Porcelain enamel are being aggressively "sold" to appliance buyers—*your customers*—by this new campaign appearing every other week in *The Saturday Evening Post*.

SELL UP! SELL

behind this



Ad No. 6, appearing
MAY 21 issue

FERRERO

Developers of

uporcelain
out porcelain
uporcelain

W...always!

Ad No. 5, appearing in
MAY 7 issue



LIORCELAIN!

thiwerful support appearing
very other week in the

POST

R CORPORATION

rs today's finer Porcelain enamels

nothing but porcelain
wipes **new...always!**



Won't stain because it **can't** stain! Genuine Porcelain enamel is as permanent as it is beautiful. It's glass-hard, non-porous, non-fading — unaffected by household acids, alkali and detergents.



Won't burn or scorch because it **can't**! Genuine Porcelain enamel is like glass, fused right into the metal. It's immune to heat, wear and corrosion. That's why you find it used on the finest appliances.



Won't scratch because it's glass. It **can't** scratch! Genuine Porcelain enamel never wears through. You can scrub it, write on it, try to burn it...and nothing happens. Look for it on your next household appliance!

FERRO CORPORATION

Developers of
today's finer Porcelain enamels

CLEVELAND • NASHVILLE • LOS ANGELES • 11 foreign countries



"A BETTER BUY"
says this label





Architectural division — of the Porcelain Enamel Institute launched its integrated program for maximum development of architectural porcelain enamel at a meeting in Pittsburgh, Pa., April 7. Under the chairmanship of J. W. Vicary, Ervite Corp., the division laid out a formal plan of action to cover many of the facets of the field. The program, according to Vicary, aims to establish industry-wide standards and specifications for both porcelain enamel curtain walls and veneers, in addition to providing answers to many of the other questions confronting the industry.

MIDWEST ENAMELERS

MEET IN MILWAUKEE

On Friday, March 25, the Midwest Enamelers Club assembled in Milwaukee, Wisconsin, for a tour of A. O. Smith Corporation and the Miller Brewing Company. The attendance of 130 men exceeded all expectations.

At A. O. Smith the group was given a brief orientation prior to the plant tour. They were told a small part of the history of the organiza-

tion and among other things given the following facts: A. O. Smith is the largest single user of steel (one and one quarter million tons per year), they produce over 40% of all automotive chassis frames and are the largest producers of line pipe.

During the tour the group watched the production of automotive chassis frames, pressure vessels and line pipe. They then visited the ceramic laboratory and finished the tour in the exhibit hall where they had an opportunity to examine samples of the

various products produced by the A. O. Smith Corporation.

Before leaving the plant the group had a short business meeting with President Rogers Fellows presiding. During the meeting three new Council Members were elected. They are Silvester Smith, Ferro Corp., Rudyard Porter, U. S. Steel Corp., and James Tustin, Rheem Mfg. Co.

Following the short business meeting, everyone moved on to an enjoyable tour, free meal and beer at the Miller Brewing Company.

ANNOUNCE PROGRAM FOR ELECTROPLATERS' CONVENTION

Titles of papers scheduled for presentation at the 42nd annual convention of the American Electroplaters' Society have been announced by the committee for the convention which will be held in Cleveland, Ohio, June 20-23.

Eugene L. Combs, general chairman, reports that the subjects are calculated to cover the most significant operating areas for producing

better finished products at lower cost to industry.

Following are tentative titles of the papers:

"Liquid Level Control", "Recovery of Waste Cyanide Zinc", "Plating Powdered Metallurgy Bronze Parts", "High Speed Brass Plating", "Materials of Construction for Plating Room", "Anodic Etch of Ferrous Parts before Plating", "Surface Preparation", "Fatigue of Plated Steel Parts", "Job Shop Costs", "Tin Plating of Copper Wire", "Nickel and Copper Plating on Coils", "Copper Plating on Steel for Telephone Drop Wires", "Effect of Ripple on

Plating", "Filtering and Handling of Chromic Acid Solutions", "Handling of Waste and Waste Treatment", "Finishing and Plating of Beryllium and Beryllium Alloy", "Vacuum Metallizing", "Anode Current on Phosphatized Copper Anodes", and "Flow Coating of Paint."

The Industrial Finishing Exposition, to be held concurrently with the technical sessions at the Cleveland Public Auditorium, will attract about 200 exhibitors of finishing equipment, service and supplies. Harold E. Bartlett, of American Decorating Co., Cleveland, is exposition manager.

At joint meeting of the Industrial Finishing Exposition committees and the American Electroplater's Society officers, plans were finalized for the AES annual meeting and exposition to be held in Cleveland, Ohio, June 20-23.



**DOW CORNING
CORPORATION**

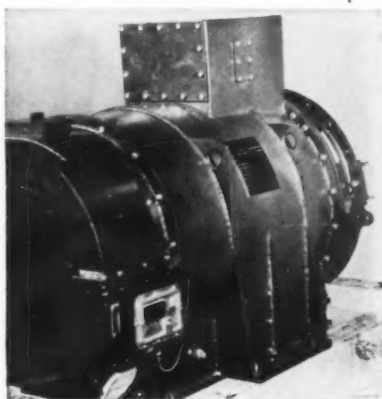
Silicone News

FOR DESIGN ENGINEERS

New Silicone Insulated Generator Produces 300% More Power/Pound

Designed to service aircraft aboard ship, the new 400 cycle, Class H generator built by Westinghouse is rated at 600 kw at 12,000 rpm; weighs only 2100 pounds compared with 7500 pounds for a comparable machine of conventional design. The rotor of this new 4-pole unit measures only 9½ inches in diameter.

This 300% increase in power per pound ratio was accomplished by skillful design, high speed operation and the use of Silicone insulating materials with a conservative AIEE hottest spot temperature rating of 180 C. Built for rugged shipboard service the generator will withstand an impact shock in the order of 20 "G's" in the direction of the shaft and 10 "G's" across the shaft. It was first used aboard the U.S.S. Timmerman.



That's another example of how the extraordinary stability of insulating materials made with Dow Corning silicones is being employed to accomplish radical improvements in the performance and capacity of electric machines. If you are designing electric machines, you can forget the old limitations imposed by the relative instability of organic varnishes and insulating materials. If you are designing new electrically energized machines, you can't afford to settle for heavy, old fashioned electrical components with limited reliability. For more data write for Reference No 38.



RTV SILASTIC PROTECTS AUTOPILOT IN BELL HSL-1 NAVY HELICOPTER

Electrical components in the autopilot system of the new HSL-1 tandem-rotor anti-submarine helicopter built by Bell Aircraft are encapsulated in Room Temperature Vulcanizing Silastic.

Why was RTV specified? Here's what Bell engineers say:

"The decision to provide a protective coating was based on the stringent environmental and test conditions, including sand and dust, high humidity, salt spray and wide temperature variations, to which the autopilot was subjected.

"Of the many coatings tested, only the silicone compounds provided adequate protection. They withstood extreme temperatures without embrittlement or softening. They exhibited low water absorption, and they have good thermal conductivity so that the heat transfer characteristics of coated components are not adversely affected.

"However, in most silicone rubbers, these optimum qualities are realized only after a controlled cure at elevated temperatures—temperatures higher than certain other autopilot components can withstand. This disadvantage was eliminated with the advent of Dow Corning RTV Silastic. RTV can be applied and cured under room temperature conditions or even in the field. Valuable time is saved and no extra equipment is needed either to apply initially or to repair this protective coating."

No. 39

Excellent Design Plus Silicones Builds Business for Transit Maker

Although they built their first unit only a year ago, the Brunson Instrument Co. of Kansas City, Mo., is already the second largest producer of surveyor's transits in the world. One reason: the Brunson is the only transit on the market which is completely mounted on ball bearings. Another reason: the bearings, accurate to within 5-millionths of an inch, are all permanently lubricated with Dow Corning 33 Grease. The instrument is therefore designed to meet the requirements of Federal Specification GG-T-621A, including operation at -80 to 160 F. Thousands of Brunson transits are already in government service in the Arctic.

No. 40

Design Edition 9

DOW CORNING CORPORATION - Dept. 5305
Midland, Michigan

Please send me more data on numbers:

38 39 40

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

ATLANTA • CHICAGO • CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEW YORK • WASHINGTON, D. C. (Silver Spring, Md.)

Canada: Dow Corning Silicones Ltd., Toronto; Great Britain: Midland Silicones Ltd., London; France: St. Gobain, Paris

finish MAY • 1955

93

PREDICT TOP '55 SALES

FOR WESTINGHOUSE

Gwilym A. Price, president, Westinghouse Electric Corp., Pittsburgh, Pa., has predicted a year of continuing high sales and new orders for the company.

He said that budget forecasts call for net sales approaching the new high established in 1954. New orders received probably will be 10% over last year, he added.

POSTPONE DESIGN ENGINEERING SHOW UNTIL SPRING OF 1956

The Design Engineering Show, scheduled to be held in Philadelphia in May, has been postponed until late spring in 1956, it has been announced by Clapp & Poliak, Inc.

Although two successful shows have been held under the name of the Basic Materials Exposition, it was decided in January to expand the concept of the exposition and the accompanying conference to encompass all aspects of design engineering.

However, sufficient time was not available to arrange for the necessary changes.

The 1956 event will be held in Convention Hall, Philadelphia, concurrently with the Design Engineering Conference.

ADMIRAL'S BAKER RETIRES

Lee H. D. Baker, vice president of appliances, Admiral Corp., Chicago, has retired after reaching the company's statutory retirement age. He will continue as a special consultant.

FEDERAL ENAMELING TO ADD MACHINERY

Charles Wiener, president, Federal Enameling and Stamping Co., has announced that the company will expend \$250,000 on additional production machinery to meet the demand for its aluminum kitchenware.

Wiener said he also intends to boost sales and introduce new products in Federal's enameled kitchenware line.

TRANE EXECUTIVE PROMOTIONS

The Trane Co., La Crosse, Wis., has announced the election of 3 executive vice presidents and a vice president.

Stockholders also increased the board of directors from six to seven.

New executive vice presidents are R. James Trane, president, Trane Co. of Canada, Ltd; Wayne J. Hood, vice president and treasurer; and Thomas J. Hancock, formerly vice president-sales.

Richard H. Pearce, Sr., purchasing agent, was elected a vice president.

Hancock was named to fill the new position on the board of directors.

FEBRUARY GAS RANGE

SHIPMENTS UP 26.8%

Edward R. Martin, Gas Appliance Manufacturers Association director of marketing and statistics, reported that during February 193,900 ranges were shipped, compared to 152,900 shipped during February 1954, an increase of 26.8%.



"HOW MEYERCORD
SERVES INDUSTRY"
No. 6 of a Series

MEYERCORD
Nameplate DECALS
Simplify RE-DESIGN
Problems

As competition stiffens perhaps you are considering ways to reduce production expense in planning your improved models and brand new products—of course without sacrificing quality and utility value.

Meyercord Nameplate Decals can help shave costs, while strengthening product identity and sales appeal. Beginning with the re-design stage, Meyercord provides a complete, continuous service to your product development, manufacturing, and merchandising departments.

There is a Meyercord Nameplate Decal for any commercial surface, to withstand any temperature extreme or unusual wear. Without obligation, let us send a highly-trained Meyercord Decal engineer to show how to cut costs and boost sales appeal.

FREE! "Mark-It" Manual of Decal Nameplates

Send today, on your company letterhead, for this valuable full-color guide to every industrial problem in marking, identification, instruction, and information.

THE MEYERCORD CO.
World's Largest Decal Manufacturer

DEPT. G-321
5323 WEST LAKE ST.
CHICAGO 44, ILLINOIS

16
INTEGRATED COMPANIES
BARIUM
STEEL CORPORATION
STEEL, ALUMINUM
AND OTHER METALS

**Need THREADED PARTS?
Get CUYAHOGA'S PRICES**

We also make
Springs, Stampings, Stud
Clips, Screw Fasteners, Moulding
Clips and Special Cold Headings.

The CUYAHOGA SPRING Co.
SUBSIDIARY OF THE BARIUM STEEL CORP.
10254 ABERA ROAD • CLEVELAND 2, OHIO

WHIRLPOOL SALES & EARNINGS UP

In a report to the board of directors, F. S. Upton, senior vice president, Whirlpool Corp., St. Joseph, Mich., reported that 1954 earnings were the largest in the history of the company. Sales and earnings were \$169,453,888 and \$9,185,038 respectively, compared with \$149,129,142 and \$4,203,036 for 1953.

U. S. S. HOMES NAMES RITCHEY MGR. MARKET DEVELOPMENT

United States Steel Homes, Inc., New Albany, Ind., housing subsidiary



of U. S. Steel Corp., has appointed Robert J. Ritchey as manager of market development, announced D. F. Rucks, Jr., sales vice president.

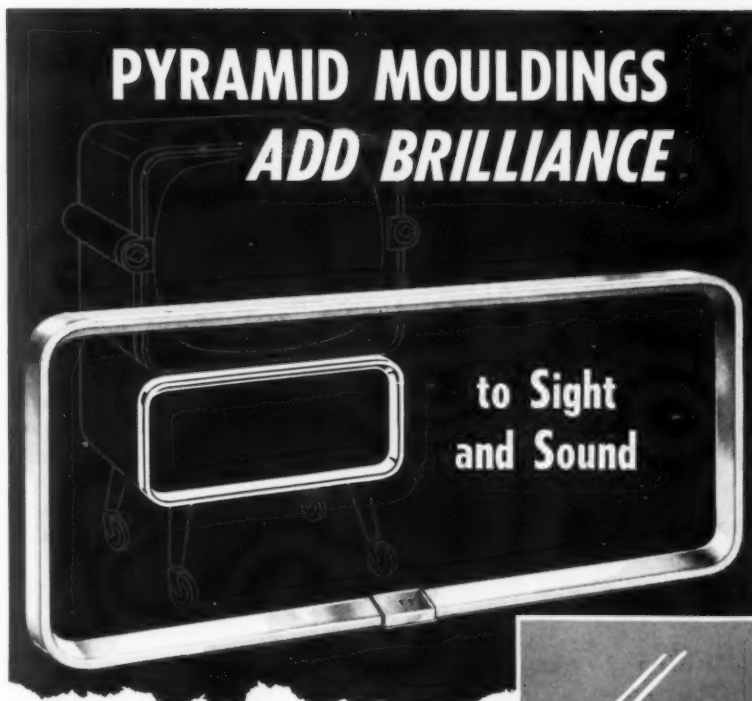
Ritchey was associated with U. S. Steel from 1937 to 1952. In 1952 he became assistant general sales manager, Townsend Co., New Brighton, Pa. He remained there until accepting his new position with U. S. Steel Homes.

PURDUE SHORT COURSE

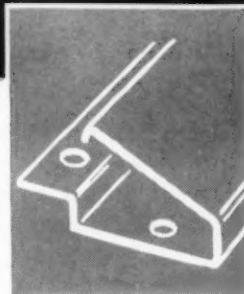
A Hot Water and Steam Heating and Air Conditioning Short Course will be given at Purdue University, West Lafayette, Ind., May 23-25, 1955.

The short course will be sponsored by The Institute of Boiler and Radiator Manufacturers and will cover the latest developments in designing and calculation of various types of hot water and steam heating and air conditioning systems.

finish MAY • 1955



Here is a custom formed bezel made for a world famous television manufacturer.* Created for added beauty, function and continuity of shape, this *one-piece, roll formed moulding* carries thru the smart styling of the viewing screen to the speaker compartment.



Regardless of your moulding application — whether to *add sales appeal* to television sets, functional frames to air conditioners, or decorative bezels to oven doors . . . Pyramid's two complete plants are at your service. Write today for your "Plan Book of Metal Mouldings."

*Name on request.

Pyramid Mouldings Inc.

5365 WEST ARMSTRONG AVE., CHICAGO 30, ILL.
NEW YORK . . . CALIFORNIA

SEND FOR YOUR FREE COPY OF "PLAN BOOK OF METAL MOULDINGS"

No one connected with the design or manufacture of any appliance should be without a copy of this book containing hundreds of standard and special mouldings. Send for your free copy today.

Without obligation, please send copy of
"Plan Book of Metal Mouldings." F-5

Name _____ Title _____

Firm _____

Address _____

finish

"keeps pace...."

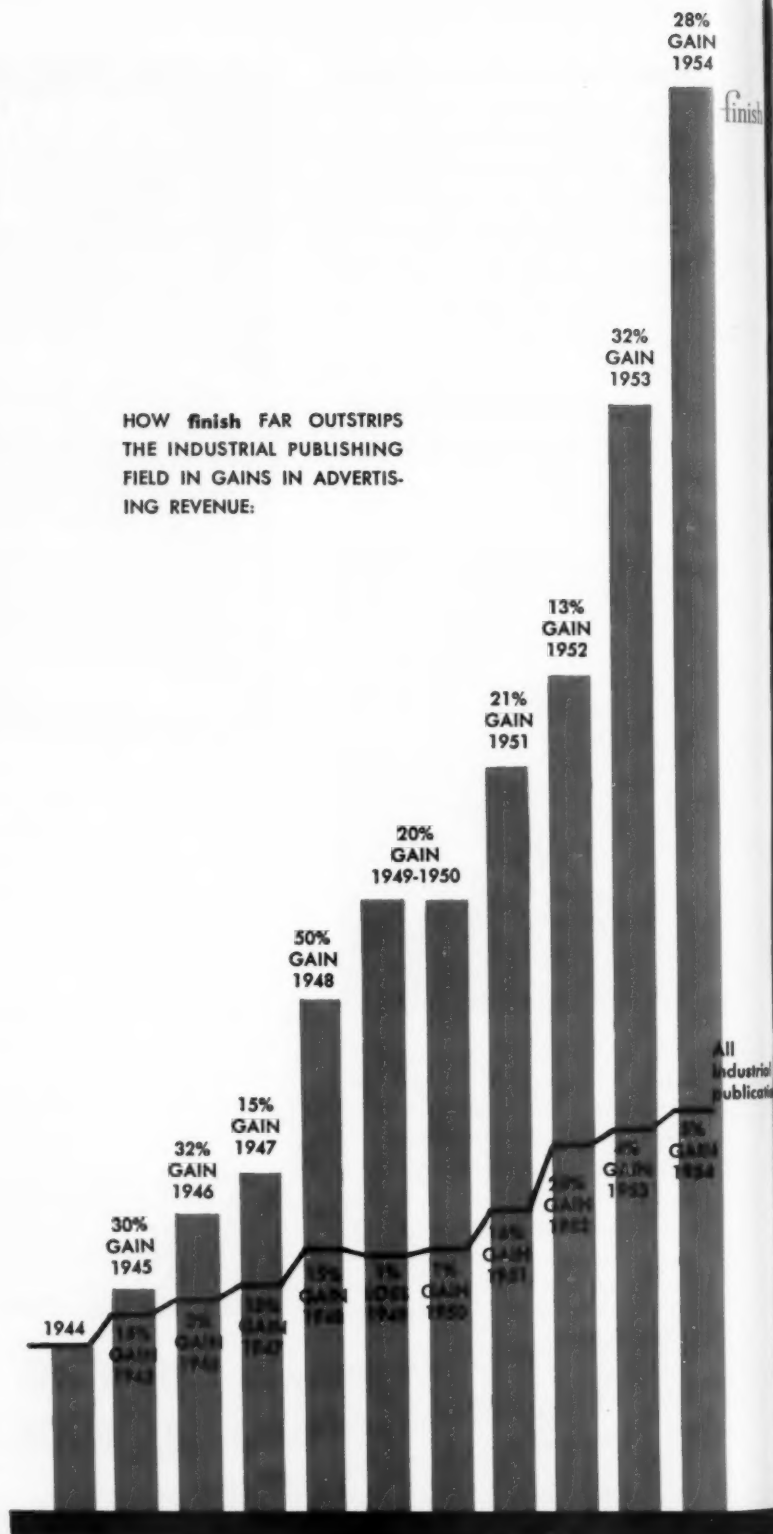
in both quality and range
of editorial material"

Mirroring the tremendous postwar growth of the appliance and fabricated metal products manufacturing field are *finish* magazine's circulation, service-and-acceptance by the people who know its sales effectiveness best — its advertisers.

The Armco story of successful selling through *finish* is typical of dozens of advertisers. Leading metal suppliers advertising in *finish* in 1955 include:

Armco
Great Lakes Steel
Inland Steel Co.
Pittsburgh Steel
Reynolds Metals Co.
Solar Steel
U. S. Steel
Wheeling Steel
Youngstown Sheet & Tube Co.

HOW *finish* FAR OUTSTRIPS
THE INDUSTRIAL PUBLISHING
FIELD IN GAINS IN ADVERTISING
REVENUE:



CIRCULATION — Undiluted coverage of bona-fide buying influences in qualified plants that produce the bulk of the industry's buying power is delivered without needless, expensive waste circulation.

SERVICE — Constant study and improvement of editorial content is demonstrated by its complete editorial service, since

1949, "from raw metal to finished product."

ADVERTISING — The growth chart speaks for itself about consistent gains in advertising acceptance. Leading companies serving the fabricated metal products field select *finish* first as their basic advertising buy — convincing evidence of the sales effectiveness of this market-designed publication.



H. V. Mercer, Manager, Advertising Department, Armco Steel Corporation, writes:

"I well remember when 'Finish' was born, and that we have been an advertiser since the first issue."

"The growth of the industry you serve has been phenomenal, and we have watched your magazine keep pace in both quality and range of editorial material. We have been impressed by your coverage of the policy-making, engineering, designing, production, purchasing and sales executives of the appliance and metal products manufacturing field."

"We have both kept pace, and the future looks even brighter for both 'Finish' and Armco."

Solidly LOCATED for sales...

For over 11 years—134 consecutive issues—ARMCO advertising has appeared on page one of finish

Two measurements of the value of **finish** to advertisers say more than an armful of statistics: The ever-increasing number of **finish** advertisers; and the continued selection of **finish** by advertisers such as ARMCO for reaching appliance and metal products manufacturers.

Last year was the 11th year for **finish**—eleven years of consistent and substantial advertising gains. Last year, well over 150 advertisers (through more than 100 agencies) used **finish** to reach the multi-billion-dollar metal products manufacturing market.

And, like ARMCO, more and more advertisers are using **finish** consistently—month after month—as an effective means of getting their sales messages into the hands of key people who make, or influence, buying decisions.

What better evidence is there that **finish** can do an equally effective job for you of concentrating on the key men, whatever their titles, who make buying decisions for appliance and metal products manufacturers!



BPA

NBP

Dana Chase

PUBLICATIONS

YORK STREET AT PARK AVE.

• ELMHURST, ILLINOIS

THE FINISHING TOUCH

SURFACE FINISHING OF STAINLESS STEEL

by D. J. Swaninger
Sales Manager — Stevens Compositions

In our business we are frequently asked to recommend methods for polishing and buffing manufactured items long before these products reach the buying public. Noticeable lately, are the increasing requests for surface finishing information on stainless steel.

Finishing of stainless steels is much like that of gold and silver. They require no protective coatings to preserve them. When polished and buffed they have utmost corrosion resistance. There are these factors, however, that must be considered in finishing stainless steel. Greater hardness and abrasion resistance—less thermal conductivity—greater coefficient of expansion.



Stainless steel finishing operation using compositions and equipment supplied by Stevens.

This means that the type of buffs, the wheel speed, the pressure of work against the buff and the compositions used are of extreme importance. Otherwise there is the danger of discoloration, distortion or warping.

No set formula can be put down on paper for finishing of stainless steel. But by making hundreds of tests in the Stevens laboratory we have developed techniques and products that have enabled us to quickly solve finishing problems for many a manufacturer.

Inasmuch as we are suppliers of automatic finishing equipment, polishing lathes, buffs, wheels and Stevens compositions we can perhaps help you with a Stevens L. V.* Report. Write us, on your company letterhead describing your product, the finish desired and required production.

*Laboratory Verified

See the Stevens exhibit at the 4th Industrial Finishing Exposition, Cleveland, June 20 to 23. Booth No. 112.



Golden anniversary — Hotpoint automatic washer itinerant display is checked by D. D. Thompson, right, merchandising manager, and E. J. Sorensen, sales planning manager, home laundry section. Color-lighted, animated display automatically demonstrates various features of the 1955 deluxe pushbutton washer in a matter of seconds.



FLORENCE STOVE SHOWS GAIN

John P. Wright, chairman of the board, Florence Stove Co., Chicago, said at the annual stockholders' meeting March 25 that the company's sales for the first eleven weeks of 1955 were up 47.7%. A profit is reflected for the first two periods of 1955, contrasting a loss for the same period in 1954.

ENAMEL PRODUCTS APPTS.

George C. Johnson, chairman of the board, The Enamel Products Co., Cleveland, Ohio, has announced the appointments of George C. Johnson, Jr., as president and treasurer; R.

Henry Norweb, Jr., as vice president and secretary; and George S. Blome as vice president.

MACK TO AMERICAN KITCHENS

Edward G. Mack has been named director of research, American Kitchens Div., Avco Mfg. Corp., Connersville, Ind., it has been announced by Curry W. Stoup, Avco vice president and general manager of American Kitchens.

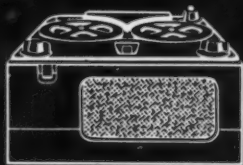
Mack, formerly director of marketing and product research, Easy Washing Machine Corp., Syracuse, N.Y., replaces Harold E. Pinches, who resigned to accept a position with the U. S. Department of Agriculture.

AHLMA dryer committee — held their first 1955 meeting as guests of the Hamilton Mfg. Co., Two Rivers, Wis. Shown at the center in the picture is E. P. Hamilton, president of Hamilton. The others, left to right, are Harold Leisey, Beam Mfg. Co., Webster City, Iowa; Richard B. Myers, Lovell Mfg. Co., Erie, Pa.; Ray Halvorsen, Hamilton; William Shaw, handler, AHLMA public relations; Edwin J. Sorensen, Hotpoint Co., Chicago; and Guenther Baumgart, executive director, American Home Laundry Manufacturers' Association.



PREVENT RUST with MACCO BLUCOAT

*the amazing
between-operation
rust proofing
solution*



RECORDER precision parts are being given the Macco Blucoat Rust Preventive treatment by one of the nation's leading electronic manufacturers.



GEARS cut, ground and tempered are treated with Blucoat to prevent rust during storage, shipping and assembly.



CARBURETOR bodies and large engine castings being treated with Macco Blucoat to prevent rust after machining and during storage.



AUTO bodies of one of the world's largest body manufacturers are given the Blucoat treatment to prevent rust before painting.

*MACCO CASE HISTORY

Blucoat is the almost unbelievably efficient and time-tested rust preventive used by leading metal processors and fabricating manufacturers the country over. They endorse its use as the only practical method of preventing rust between production operations and assembly—and during interplant transportation and storage.

5 REASONS FOR BLUCOAT'S NATIONAL ACCEPTANCE:

1. Blucoat is water soluble, making it economical, yet extremely efficient.
2. Blucoat is adaptable to an almost unlimited variety of applications and conditions.
3. Blucoat's powerful rust inhibitor works equally well on steel, cast iron, forgings or die castings.
4. Blucoat leaves no oily film—adheres better to metal—collects less dust, chips, etc.
5. Blucoat has withstood perfectly a salt spray test of more than 80 hours. Vastly superior to soluble oil, it contains no poisonous elements. No alcohol, making it exceptionally stable.

For the prevention of rust, Blucoat positively has no equal. Whether the product be the finest of automobile bodies or simply bale tie-wires, Blucoat's versatility makes it most indispensable for any metal processing plant.

Write today or call a Macco sales engineer. Phone Prescott 9-0800, Chicago.

*Actual Case History available on request.

MACCO
PRODUCTS COMPANY

9210 SO. SANGAMON STREET • CHICAGO 20, ILLINOIS



1920

1955

A business grown big through SERVICE



1939

Ferro launches "Little Red School House on Wheels," first P. E. training course to be taken out into the field.

1955

Cost reduction techniques and equipment are subjects of Ferro's latest "schools", talks given in customers' plants.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

MACKASEK RETIRES, OLIVER NEW PEI MANAGING DIRECTOR



EDWARD MACKASEK

Edward Mackasek has announced his retirement as managing director of the Porcelain Enamel Institute, Washington, D.C., effective May 1. He has completed 11 years of service as head of PEI staff operations.

John C. Oliver will now head the Institute's staff operations, according to an announcement by Glenn A. Hutt, of Ferro Corporation, and PEI president. Oliver will assume the responsibilities of managing director in addition to his present duties as



JOHN C. OLIVER

secretary. Oliver joined PEI in February 1949, soon was named assistant managing director, and in November 1952 became secretary.

Following an extended European trip, Mr. Mackasek will establish offices in Washington, and will serve as a consultant to the porcelain enameling industry. It is expected that he will undertake specific consulting assignments for PEI, particularly in connection with the Architectural Division.

Quarterly meeting — of Steel Kitchen Cabinet Manufacturers Association, held at Waldorf-Astoria Hotel, March 11, included a three-man panel symposium and the appearance of two U. S. Steel Hour television stars. Shown at speaker's table, l. to r., were: Seated — Johnny and Mary Kay, of U. S. Steel Hour; C. S. Motter, vice president of Morton Mfg., and president of SCKMA; speaker Leonard G. Haeger, AIA, technical director, Levitt and Sons, Inc. Standing — Robert C. Myers, U. S. Steel; speakers John Hancock Callender, AIA, construction architect, and Russell Wright, industrial designer; and Marvin Berz, Marvel Metal Products, panel moderator.



MAY • 1955 finish

SERVEL NAMES HERMANN

Irvin A. Hermann has been promoted to administrator of systems and procedures at Servel, Inc., according to an announcement by John H. Wall, vice president and general manager of the company's home appliance division.

NORBERG LEAVES CROSLLEY-

BENDIX TO FORM OWN FIRM

O. E. Norberg, director of appliance engineering, Crosley and Bendix



Home Appliances, has resigned to form his own firm, O. E. Norberg and Associates.

The new firm will act as consultant on product design and development.

ADMIRAL '54 SALES FIGURES

Consolidated net sales of Admiral Corp., Chicago, in 1954 were \$219,565,089, compared with \$250,931,605 in 1953, Ross D. Siragusa, president, has announced. This is the third year in the company's history that sales have exceeded \$200,000,000.

NEW RAYTHEON \$1,300,000

METAL WORKING PLANT

Raytheon Mfg. Co., Chicago, Ill., has announced the construction of a \$1,300,000 plant near Melrose Park, a Chicago suburb.

The one story building, containing 203,874 square feet of space, will contain all television metal working, painting and cabinet construction facilities.

finish MAY • 1955

WHAT'S NEW in porcelain enameling

This new VERTICAL RECIPROCATING MACHINE

assures you a
beautiful and
uniform finish
at lower cost



This new unit is ideal for automatic spraying of flatware suspended from overhead conveyors. One or two Binks Model 21V air-operated automatic spray guns are mounted on a motor-driven carriage which moves smoothly up and down vertical tracks. The speed of the carriage and the length of the stroke can be adjusted to the speed of the conveyor and the size of the ware.

The spray guns turn off and on automatically at the top and bottom of the ware to avoid overspray and waste. The positive automatic control assures uniform coating of all surfaces...guarantees a beautiful porcelain enamel finish at a considerable savings in materials.

The Binks Model 21V Automatic Spray Guns used on this machine are specially built to take the punishment of continuous operation. They are equipped with tungsten carbide inserts and tips in the fluid nozzle and the needle valve respectively to withstand the abrasive action of frit and to provide long, trouble-free service.

For further information To learn more about how the Binks Vertical Reciprocating Machine can save you money, or to obtain help on any spray coating problem, just contact your nearest Binks Branch Office or write direct to:



SPRAY BOOTHS



COMPRESSORS



FREE INSTRUCTION

BINKS MANUFACTURING COMPANY
3122-40 Carroll Ave., Chicago 12, Illinois

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

NEWS ABOUT SUPPLIERS

ARMCO \$60 MILLION

EXPANSION PROGRAM

Armco Steel Corp., Middletown, Ohio, has disclosed details of a \$60 million expansion and improvement program announced earlier this year.

According to W. W. Sebald, president, approximately \$25 million will be spent at Armco's Butler Works, \$15 million at the Ashland Works and \$18 million at Middletown.

GLIDDEN APPOINTS FORBES

Appointment of George S. Forbes as field manager for The Glidden Co.'s national industrial sales has been announced by A. D. Duncan, Glidden vice president and general manager of the Paint Division.

INLAND STEEL BUYS

ARTHUR C. HARVEY CO.

Inland Steel Co., Chicago, has acquired Arthur C. Harvey Co., Boston steel merchandising firm, and will merge that business with the New England operations of Joseph T. Ryerson & Son, Inc., subsidiary of Inland Steel.

PITTSBURGH PLATE NAMES FAIR

Appointment of J. C. Fair, Jr., as sales representative of its new fiber glass sales branch in Charlotte, N. C., has been announced by Robert A. McLaughlin, director of sales, Fiber Glass Division, Pittsburgh Plate Glass Co. The new unit will service the southeastern territory.

PENNSALT SALESMEN GET

STORY ON NEW GILRON

DRAWCOTE LINE

Gilron's Drawcote and the Pennsylvania Salt Mfg. Co.'s line of lubricants became full-fledged partners at the meeting of Pennsalt and Gilron metal processing salesman and service engineers. Pennsalt salesmen and

engineers from all parts of the country met for three days in Pennsylvania's Pocono Mountains, where they got a report from Gilron executives and technicians on the history, development and technical features of the Gilron line of dry soap lubricants which they will offer customers in addition to their own Pennsalt Fos and metal cleaners line.

MULLINS NAMES EVERSMAN

MANAGER OF SALEM PLANTS

The appointment of Carl A. Eversman as manager of Mullins Mfg. Corp.'s Salem, Ohio, plants has been announced by H. O. Smith, vice president in charge of operations.

REYNOLDS NAMES 3 V. P.'S

Reynolds Metals Co. has announced the election of three vice presidents — C. E. Coghill, John Krey and W. Monroe Wells.

BLACKMORE TO REPRESENT PAINT FEDERATION IN EUROPE

Paul O. Blackmore, Interchemical Corp., Newark, N. J., will represent the Federation of Paint and Varnish Production Clubs at the summer meetings of the Federation of Technical Associations of the Paint and

Printing Ink Industries in Continental Europe (FATIPEC) and the Oil and Colour Chemists' Association of Great Britain.

Blackmore, a member of the New York Club and a past president of the Federation, will present a technical paper at both of the meetings.

INLAND STOCK OPTION PLAN

Inland Steel (Chicago) officials believe that the company's stock option plan enabling employees to buy its shares through payroll savings has been so successful that a new plan modeled closely on the present one will follow it when it is finished in August.

DEUTSCH, MONARCH ALUMINUM

PRESIDENT, DIES

Raymond Deutsch, founder and president of Monarch Aluminum Mfg. Co., died February 27 in Boca Raton, Florida.

Deutsch organized one of the first commercial aluminum foundries in the United States in 1912. The business was incorporated in 1913 as the Monarch Aluminum Ware Co. Deutsch was the president of this company and served as president of its successor, Monarch Aluminum Mfg. Co., until his death.

At his death Deutsch was a vice president of the Aluminum Association. He had been active in the Aluminum Wares Association and other trade associations.

New Stevens Mfg. plant — a single-story brick structure of 31,000 square feet located in Lexington, Ohio. W. C. Stevens, company president, stated that the plant was built to meet an increased demand for Stevens' products. Stevens produces Stemco bimetal thermostats and switches.





C. A. EVERSMAN



P. O. BLACKMORE



G. R. CALKINS



RAYMOND DEUTSCH



IRA W. FINE



E. C. BLOOMBERG

LAMMIMAN OF DEVILBISS DIES

Lewis W. Lammiman, director of technical services for the DeVilbiss Co., Toledo, Ohio, died February 27.

In his post at DeVilbiss he directed the activities of customer advisory services on technical matters and the company's spray painting school.

He was recognized as an authority on the solution of production and finishing problems involving paint spray equipment and materials.

MONARCH ALUMINUM ELECTS**BLOOMBERG PRESIDENT**

The election of Edward C. Bloomberg as president of Monarch Aluminum Mfg. Co., Cleveland, Ohio, has been announced by the board of directors. He fills the office left vacant by the death of Raymond Deutsch.

Bloomberg has actively participated in the general management of the company during the past 12 years. He joined Monarch in 1943 after resigning as vice president of The Ideal Furniture Co., Charleston, W. Va. He was elected treasurer of Monarch in 1947 and in 1948 was selected executive vice president and treasurer.

BUTTERS TO HOMMEL SALES STAFF

Philip W. Butters has joined the sales and service staff of the O. Hommel Co., Pittsburgh, Pa., and will be associated with John E. Crumrine, contacting porcelain enamel plants in the eastern territory.

WHEELING BLAST**FURNACE PRODUCING**

Wheeling Steel Corp.'s Riverside blast furnace at Benwood, W. Va., has begun producing pig iron, according to J. H. McElhinney, vice president. All six of Wheeling Steel's blast furnaces are in production to

meet the demands of company's steel output at Steubenville and Mingo Junction, Ohio.

PEMCO HONOR SERVICE SOCIETY HOLDS ANNUAL DINNER

Awards for service ranging from ten to thirty-five years were presented to 25 employees of Pemco Corp., Baltimore, Md., at the Seventeenth Annual Dinner of the Pemco Honor Service Society.

A feature of the dinner was the unveiling of two oil paintings of Messrs. Karl Turk, Sr., and Heinrich Turk, co-founders of the company now known as Pemco Corp.

PERMACEL DIVISION MOVES

The Dallas, Texas, division office and warehouse of the Permacel Tape Corp., New Brunswick, N. J., has moved to 9000 Denton Drive, Dallas 20, Texas, it has been announced by George A. Fitzgerald, industrial sales manager.

BINKS SPRAY PAINTING SCHOOL

Binks Mfg. Co.'s free School of Spray Painting will be held at the company's plant in Chicago June 6-10.

It is open to anyone interested in, or connected with, the industrial application of paint and coatings.

WHEELER ASST. SALES MGR.**INDIANA STEEL PRODUCTS**

The Indiana Steel Products Co., Valparaiso, Ind., manufacturer of permanent magnets, has announced the promotion of Port M. Wheeler to assistant sales manager. Wheeler was formerly midwestern regional sales manager.

Prior to joining the magnet firm in 1950, Wheeler was a sales engineer for Chicago Vitreous Corp., Chicago, for six years.

PITTSBURGH PLATE TO BUY**BARRELED SUNLIGHT PAINT**

Pittsburgh Plate Glass Co., Pa., has announced the execution of an agreement providing for the purchase of Barreled Sunlight Paint Co. with paint producing plant and headquarters at Providence, Rhode Island.

The purchase will not become effective until all stockholders of Barreled Sunlight Paint consent to the transaction.

GLIDDEN BUYS ZAPON DIV.

Purchase of assets of the Zapon Industrial Finishes Div., Atlas Powder Co., Wilmington, Del., by The Glidden Co., has been announced by Dwight P. Joyce, Glidden president and board chairman.

The new unit will operate as the Zapon Industrial Coatings Div. of The Glidden Co.

ENAMELSTRIP NAMES FINE

Ira W. Fine has been appointed Philadelphia area sales manager for Enamelstrip Corp., Allentown, Pa.

Fine joined Enamelstrip as a salesman in 1954. Formerly he was office manager and buyer for Schaeffert Engineering, Camden, N. J.

SORENG NAMES CALKINS**V. P. AND SALES DIRECTOR**

Gilbert R. Calkins has been appointed vice president, director of sales, Soreng Products Corp., Schiller Park, Ill., announced Louis Putze, president. Calkins previously was sales manager.

Prior to joining Soreng he was associated with the Redmond Co., Inc., Owosso, Mich., in various sales capacities and as general manager of induction motor sales. He was also associated with the Electric Motor Corp. as sales manager.



1920

1955

A business grown big through SERVICE

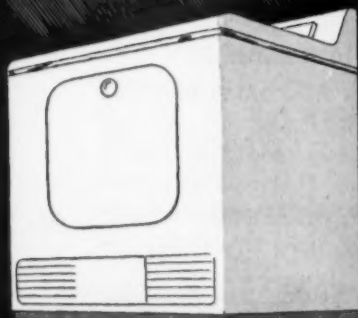


1940

Ferro introduces first successful Zirconium Frits, reducing weight and thickness of P. E. cover coats.

1955

Subsequent development by Ferro of Titanium Cover Coats further reduces weight and thickness—the latter to .008 inches.



FERRO CORPORATION

cleveland • nashville • los angeles

IN CANADA: FERRO ENAMELS, LTD., OAKVILLE, ONT.

STEINWENDER PERMUTIT V. P.

Sheller L. Steinwender has been appointed vice president, The Permutit Co., New York City, according to Henry W. Foulds, president of the water conditioning firm.

COPPER-CLAD MALLEABLE

RANGE LIQUIDATES

H. L. Hetzler, purchasing agent and secretary, Copper-Clad Malleable Range Co., has reported to the *finish* offices that the company is liquidating its holdings and is going out of business entirely.

CROSBY NAMES NAUER

The appointment of Joseph A. Nauer, Jr., as assistant sales manager

of ranges, freezers and water heaters, Crosby Div., Avco Mfg. Corp., Cincinnati, Ohio, has been announced by J. K. Knighton, general sales manager of Crosby appliances.

Prior to joining Crosby, Nauer was regional sales manager for Stewart-Warner Corp.

IRVINGTON BOILER MOVES

TO NEW FACILITIES

Mrs. J. B. Brown, president, Irvington Boiler & Steam Engine Works, Inc., has announced the removal of administrative and production facilities from Irvington, New Jersey to Newark, New Jersey.

The firm manufactures boilers and automatic gas and electric water heaters.

INTERNATIONAL HARVESTER ENTERS CONTRACT MFG. FIELD

production of current Harvester refrigeration products will not be affected by move into contract field

International Harvester Co.'s Refrigeration Division is planning extensions in its operations to include the manufacture of refrigeration products for other firms on a contract basis, according to C. D. Harris, general manager of Harvester's Refrigeration Division, Evansville, Ind.

Harris announced the appointment of R. T. Robinson and T. P. Hyde to the new positions of manager of contract sales, refrigeration products. Both men are veterans in the Harvester organization and the Refrigeration Division. They will devote full

time to establishing contracts for Harvester to manufacture refrigerators, freezers and air conditioners for other firms in addition to the regular line of Harvester refrigeration products.

Harris said the move is being made in the interest of maintaining stable production and employment for the Harvester Refrigeration Division through increased production requirements. It will not affect the manufacture of refrigeration products sold through Harvester's regular retail outlets.

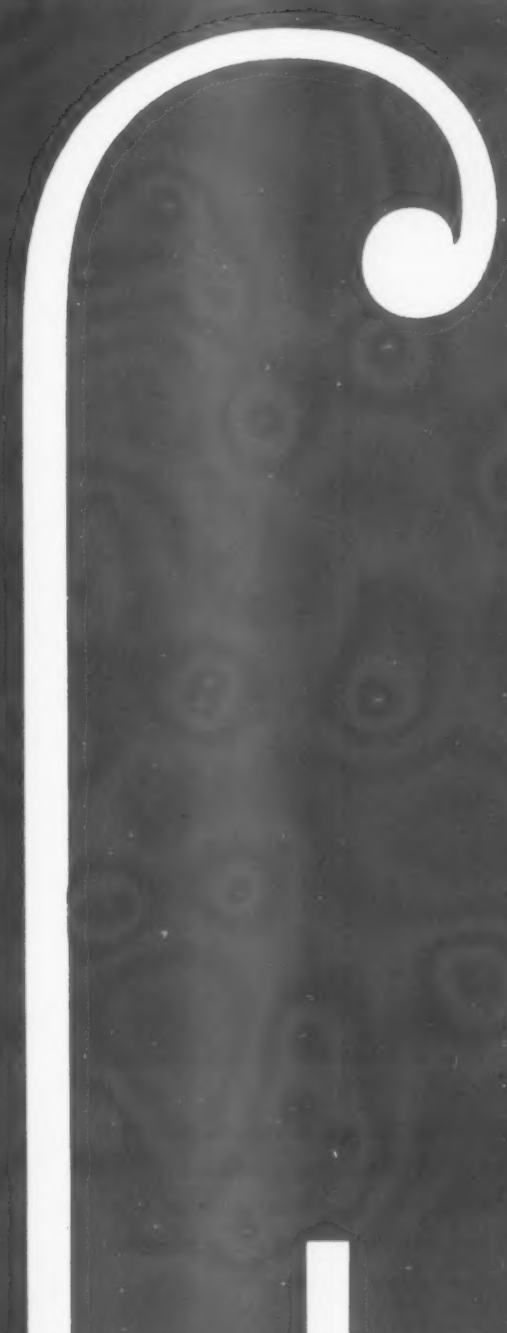
T. P. HYDE



R. T. ROBINSON



MAY • 1955 *finish*



May • 1955

sale transit

FROM ASSEMBLY LINE TO FINAL CUSTOMER

ONLY A FEW
SURVIVE A
CENTURY



1855 - 1955

100
YEARS

There are not many in the business world able to surmount the changing events of one hundred years—wars, panics, depressions, economic turmoil. To do so, a company must maintain and perform services which engender loyal and friendly customer relations.

It is therefore with deep satisfaction that we mark our first centennial. You have helped to make it possible—and we extend our sincere thanks.

RATHBORNE, HAIR AND RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

CONTENTS

DESIGNED TO GO PLACES

by E. R. Wiles.....ST-5

PACKAGING METHOD

FOR ROOM HEATERS.....ST-7

EXPECT RECORD MATERIALS

HANDLING SHOW.....ST-8

SAFE TRANSIT NEWS.....ST-10

COPYRIGHT 1955
DANA CHASE PUBLICATIONS
York St. at Park Ave.
Elmhurst, Illinois
PRINTED IN U.S.A.



Safe Transit labels and car placards — are now being used by Amana Refrigeration, Inc., of Amana, Iowa, recently certified by the National Safe Transit Committee. Shown inspecting a packaged food freezer bearing a Safe Transit label are, left to right: Walter Wendler, vice president; Kermit Bridgeford, production manager; E. L. Hinchliff, director of sales. Note Safe Transit placard on side of boxcar.

Special impregnated paper bags — are now used by Kisco Company, Inc., of St. Louis, Mo., to protect the fine finish of their Circularair fans during shipment. Previously, Kisco used sheets of plain kraft paper, and later waxed sheets. Friction between the paper and the enamel finish occasionally caused abrasion and scratches, and with waxed paper there was often a wax transfer in hot weather. John H. Brackbill, vice president and purchasing agent, and Edwin F. Seliner, packaging supervisor and traffic manager, agree that the use of the new paper bags has eliminated damage to the finish of Kisco fans.

PHOTO COURTESY CENTRAL STATES PAPER & BAG CO.



**CHICAGO
MILL
helps
RHEEM
*Deliver
Safely***



A lift truck operator stacks 82-gallon electric water heaters packaged in a Chicago Mill wirebound container.

Many leading appliance manufacturers depend upon Chicago Mill and Lumber Company to provide safe shipment for their finished products. They know that experienced engineers and crate designers have used the latest engineering principles and testing equipment to design the best container for their product. They know that they can count on a Chicago Mill container to deliver their valuable finished products safely.

If you are having difficulty in solving a troublesome shipping problem, call in a Chicago Mill representative. Technical information, packing information, and testing services are available without obligation.

**Wirebound
Nailed or Hinge Corner
Cleated Plywood
Cleated Cravener
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes**

★
FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

**A shipping container for
every shipping purpose**

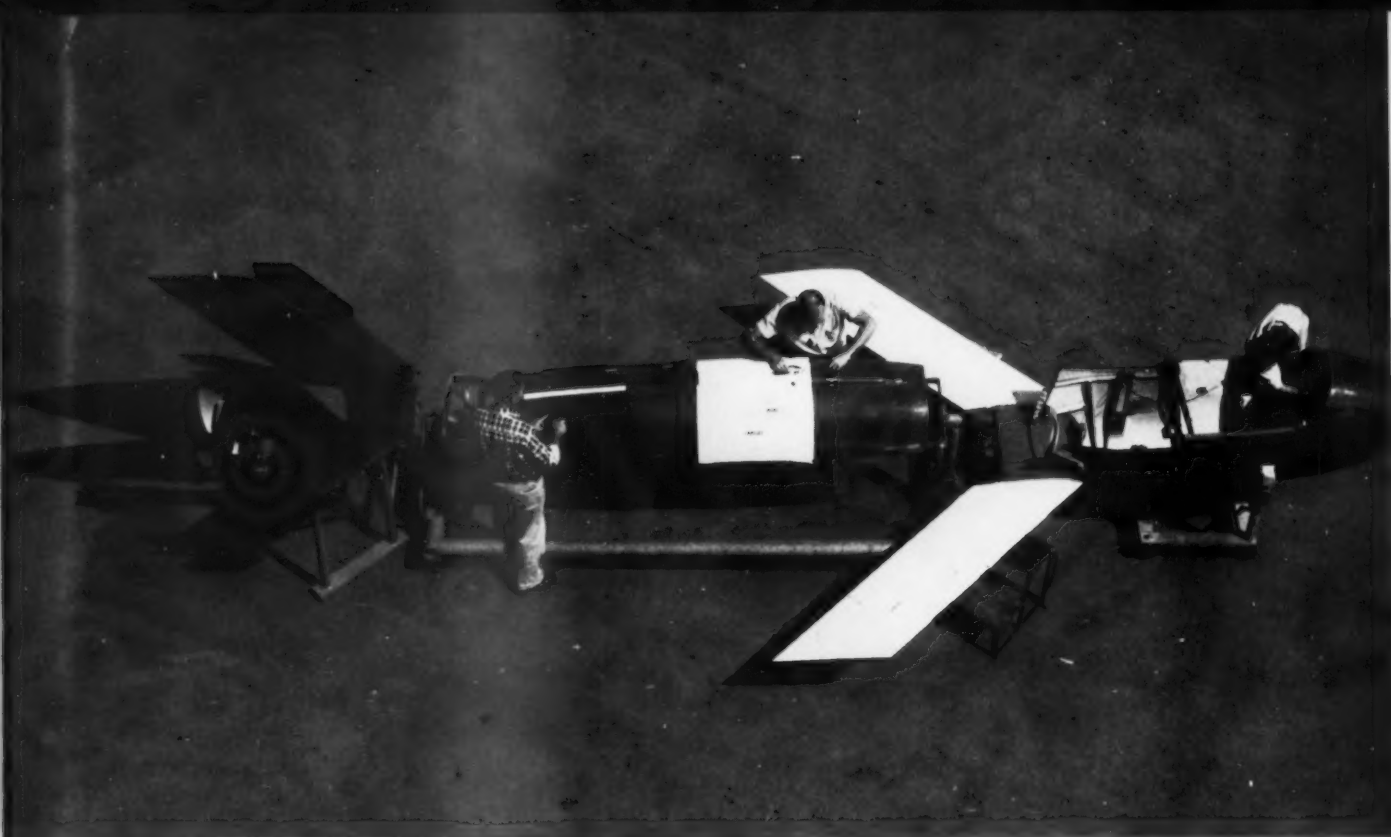
FOR SAFER TRANSIT BY •  TRUCK •  BOAT •  TRAIN •  PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street

Chicago 3, Illinois

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois



Designed to go places

describing how packaging for safe shipment helps speed assembly of the Firebee jet target drone at its launching destination

by E. R. Wiles • GENERAL SUPERVISOR, RECEIVING-SHIPPING, RYAN AERONAUTICAL COMPANY

AFAR from glamorous, yet very important problem associated with missile-type aircraft is logistics. Unlike conventional aircraft, missiles cannot be ferried from factory to duty station—they must be shipped. And this must be accomplished in much the same manner as a crate of eggs.

While the accuracy of a comparison between eggs and missiles is certainly debatable, there exists, nevertheless, a definite similarity between the two as far as shipping is concerned. Just as the eggs must arrive at their ultimate destination un-

broken, still fresh and ready for the frying pan, so must the missile arrive—its delicate mechanisms intact and unharmed—ready for immediate assembly, test and flight.

There the similarity ends, for the missile, unlike the eggs, is not always uncased and used right away. In-

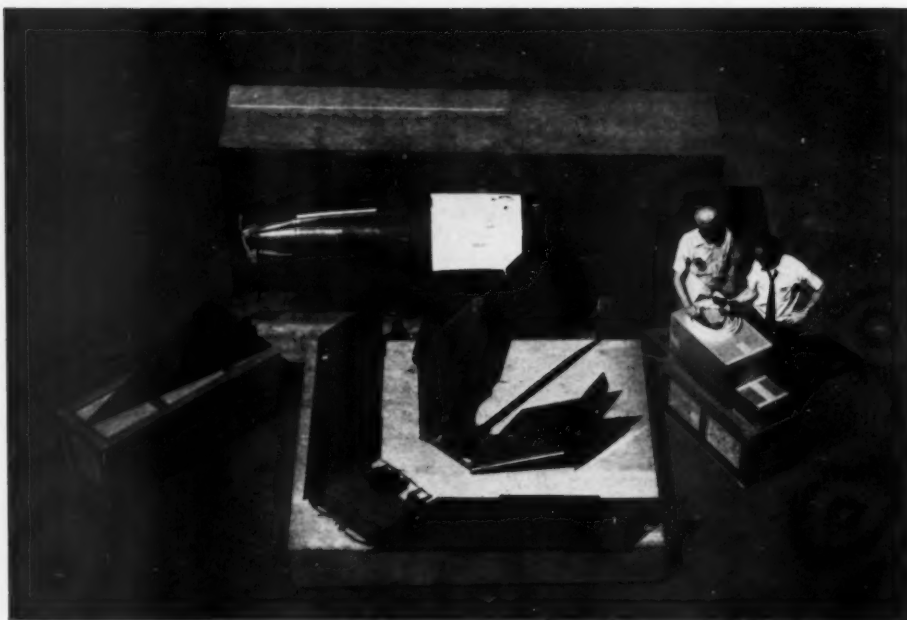
Above: Lined up opposite attachment points, the Firebee components are ready for rapid assembly. Self-aligning bolts and simple four-point attachments permit several men to assemble the complete target in just a little more than an hour

stead, it may be left in its crate and stored for a long period of time—its components not to be assembled until its use is required.

Ryan engineers had these factors in mind when they designed the Firebee pilotless jet target drone. As a result, the Firebee incorporates a breakdown scheme aimed at rapid assembly, simplified maintenance and easy shipment.

Somewhat less than half the size of a present-day jet fighter aircraft, the Firebee target is a mid-wing, all-metal pilotless aircraft with sharply swept-back wings and tail surfaces. The

ST-5



Firebee assemblies are shown with their respective containers. Wing tips and vertical stabilizer are removed for ease in shipment.

1800-pound airframe has a span of approximately 12 feet, a length of 18 feet and a height of six feet. Power is provided by a Fairchild J-44 or Continental-Marbore J-69 turbojet engine of 1000 pounds thrust.

The Firebee is designed for easy assembly. Construction is aluminum, magnesium and stainless steel in five major assemblies — fuselage, nacelle, wing, empennage and parachute container (tail cone). Simple four-point attachments and self-aligning bolts

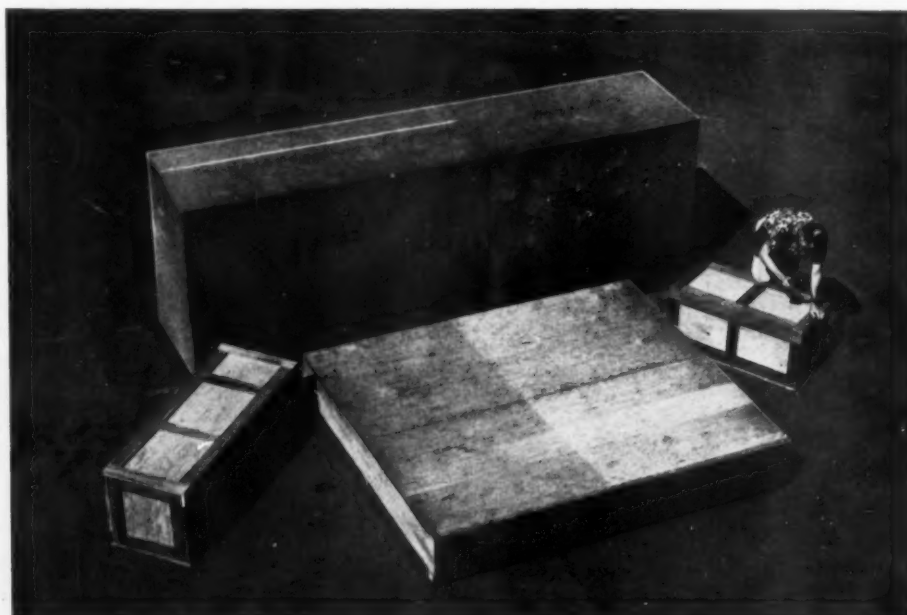
make it possible for two or three men to assemble or disassemble the complete target in little more than an hour.

By packing more than one major assembly in each, the Firebee shipping containers are few in number and take a surprisingly small amount of shipping volume and storage space. The Navy KDA-1 version, for example, is shipped in a group of only four containers with a total weight of approximately 2,500 pounds.

Largest and heaviest of these is the crate in which the fuselage and nacelle (complete with engine installed) are packed. For shipping purposes, the two major assemblies are combined as one and mounted on two padded wooden saddles which are anchored to the base of the crate. The base has another highly practical function in that it serves as a handling fixture for the Firebee while the latter is still on the production line.

to Page ST-8 →

Ready for shipment, the assemblies have been crated in water-resistant plywood containers which are designed for limited re-use. Total weight of four containers is 2500 pounds.



Packaging method for room heaters

wrap-around packing liner holds heaters securely in place in shipping container

DOWN in Clinton, North Carolina, Henry Vann Industries, Inc. is currently shipping oil-fired room heaters to dealers all over the United

States in corrugated boxes using a special packing liner to hold the heaters securely in place during transit.

As soon as a heater leaves the assembly line, it is enclosed in the wrap-around corrugated liner, and a tray is inserted in position at the

Right: Heaters at Henry Vann plant travel along roller conveyor to be packed for shipping. First step is to enclose them securely in a special packing liner which will keep heater from shifting after it is placed in outer shipping box.

Below: Outer shipping box is slipped over liner-wrapped heater. The container is a regular slotted shipping box on which the Henry Vann trade mark is attractively printed in red.

Right below: The last step is sealing the shipping container with tough cloth tape. Now in full production, the oil-fired room heaters are shipped to dealers all over the United States.

PHOTOS COURTESY HINDE & DAUCH



top. With the heater held securely in position, the outer shipping box is slipped over the liner-wrapped unit.

The last packaging operation is sealing the box with a tough fabric tape. After the top has been sealed, the box is turned upside down and the bottom is similarly sealed.

Test shipment

To test this new packing method for room heaters, Henry Vann sent a test shipment to Richmond, Virginia, and the heaters arrived in perfect condition.

The company reports that results of this test shipment have since been substantiated by many regular shipments (mostly by truck) to all parts of the country.

Designed to go places

→ from Page ST-5

The next largest container holds the wing and empennage assemblies. These also are secured to padded wooden saddles which are anchored to the base of the crate. The two

remaining boxes contain (1) the parachute's tailcone, and (2) the main parachute, drag parachute, parachute swivel, log books and records. Miscellaneous loose parts and components are contained in a small box which is secured to the base of the fuselage nacelle crate along with a dry charged battery.

Designed for limited re-use, the containers are constructed of water resistant plywood. Tops and sides of the fuselage nacelle crate and wing empennage crate are so designed as to be easily removed, leaving the components in open view on the crate bases for ready accessibility and ease in handling during assembly.

Since the containers are often stored in the open, precautions have been taken to protect the Firebee assemblies from the weather. The fuselage-nacelle assembly is enclosed in a moisture-vapor proof container which is heat-sealed on the seams. A humidity indicator is placed in view through a crate inspection door.

NEW AAR CERAMIC SPECIALIST

The Freight Loss and Damage Prevention Section of the Association of American Railroads has announced the appointment of P. E. Grigg as ceramic specialist. He succeeds F. B. Gibson who resigned.

A graduate of the Ceramic Engineering School at the University of Illinois, Grigg's previous business experience consists of 13 years as ceramic engineer for three large suppliers of porcelain enamelware. He recently served as ceramic research engineer for the Armour Research Foundation.

NYU, SIPMHE TO CONDUCT PACKAGING SHORT COURSE

New York University's Office of Special Services to Business and Industry will co-sponsor with SIPMHE the 1955 Packaging and Short Course to be held at Kingsbridge Armory, New York City, September 19-22.



**B-G
EXCLUSIVE
TIGHT-
CORNER**



**CUTS YOUR OVER-ALL
SHIPPING COSTS**

B-G Collapsible, Hinged, Tight-Corner Containers offer you many advantages: Economy In Cost—Quick Assembly—Maximum Strength and Durability—Complete Product Protection.

These Specially Designed Boxes and Crates, palletized for Fork Lift Handling, will reduce your over-all packing, storage and shipping costs and convert these charges into profits.

B-G Containers are pre-tested to meet all National Safe Transit Specifications.

OVER 30 YEARS PACKAGING EXPERIENCE

Tight Corner Hinge Corner Mills

Wooden Pallets

Model A Pallet Boxes

Model B Pallet Boxes

Model C Pallet Boxes

Kraft Cases

Wooden Boxes

Six Section Pallet Crates

ALWAYS CHECK B-G
Write for complete details and prices to...
Phone WHitehall 4-3252

BIGELOW-GARVEY
lumber company
320 W. HURON STREET • CHICAGO 10, ILLINOIS

EXPECT RECORD MATERIALS HANDLING SHOW

Advance registrations for the 6th National Materials Handling Exposition indicate attendance of record-breaking proportions, it was disclosed by Clapp & Poliak, Inc., exposition management firm which founded and produces the event.

The show will be held this year at the International Amphitheatre, Chicago, May 16-20. Preliminary estimates indicate that it will attract well over 25,000 visitors from all over the world.

Equipment valued at almost \$10,000,000 will be transported to Chicago for the event and set up for demonstration in simulated factory and warehouse conditions. Approximately 250 companies will exhibit.

For the first time, equipment shown will emphasize systems of materials handling, rather than single pieces of machinery. The displays will be far more varied than in previous years.

Growing interest in automation in the nation's factories is one of the factors attributed to this year's unusually large advance registration. Materials handling, which is the science of moving materials by mechanical means, is the key to automatic processes.

Concurrent with the show, the American Material Handling Society will stage a conference on present-day methods of material handling. Forty-five leading executives will discuss a total of 29 subjects during the three-day conference sessions.



AIM* for Easier, Faster Carloading with Acme Steel Strapping Ideas



Help in solving
this shipping problem
came from Acme Idea
Man, Art Hartley,
of Chicago.

ask your
***Acme Idea Man**
to help solve your
problems

The efficiencies in modern methods of loading freight cars pay off for both the shipper and the consignee . . . in time saved and money saved. Acme Steel Strapping Idea #412 is helping prove this for Thor Corporation, Chicago. Washers, dryers and ironers are packed in cars by the "floating load" method. Because the entire load can shift on impact, up to 50% of the shock is dissipated without damaging the lading. By this Acme Steel method, loading time and dunnage costs are reduced. And since cumbersome wood bracing is no longer required, freight costs are lower. Unloading of the safely delivered appliances is underway after a simple snip of the steel strapping.

Ask your Acme Idea Man to demonstrate how you can give better protection to your shipments . . . at lower cost. Or, write Acme Steel Products Division, Dept. RS-55, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Illinois.

AIM For Safe, Lower-Cost Shipping

ACME STEEL CO.
CHICAGO

**ACME
STEEL**

SAFE TRANSIT NEWS

NATIONAL SAFE TRANSIT COMMITTEE



Associations Building, 1145-19th St., N. W., Washington 6, D. C.

New Certifications - The following manufacturers have recently adopted the Safe Transit pre-shipment tests for their packaged products and have been officially certified under the National Safe Transit Program:

Amana Refrigeration, Inc., Amana, Iowa
Bee Line Company, Davenport, Iowa
The C. A. Olsen Mfg. Co., Elyria, Ohio
Reda Pump Company, Bartlesville, Oklahoma
The Siegler Corporation, Centralia, Illinois
Victory Metal Mfg. Corp., Plymouth Meeting, Penna.

The newest Safe Transit Laboratory is Canton Corrugated Box Company, Canton, Ohio. The Laboratory marked their certification under the National Safe Transit Program with a meeting on April 14 that was devoted to Safe Transit activities and which included actual demonstrations of Safe Transit tests and a showing of the Safe Transit film.

Safe Transit Label - For the third consecutive month the Safe Transit Committee has supplied to its Certified Manufacturers Safe Transit labels in quantities totaling well over a million. The label, used by manufacturers to identify their pre-shipment tested packaged products meeting the test requirements, has always been an important factor in realizing the Program's goal of reducing in-transit damages to an absolute minimum. It is evident now, however, that the labeling phase of the Program is making a contribution to the realization of this objective that is beyond what even the initiators had anticipated. This is due in large part to the whole-hearted support that carriers are giving to the labeling program, and to the constancy with which they have conducted educational programs to familiarize handling personnel with the emblem and the story behind it. An example of this support is a recent issue of Firing Line, published by the Carolina Freight Carriers Corporation, which for the second time devoted its entire eight pages to the Safe Transit label. The editors have chosen an effective and time-tested method for impressing upon their employees the significance of the Safe Transit emblem. A copy of the publication may be obtained by writing the Committee's headquarters office in Washington, D. C.

AAR Holds Tenth Educational Seminar - The Association of American Railroads held its Tenth Educational Seminar on April 25-29 and featured again Safe Transit activities. Material on the Safe Transit Program, supplied by the Committee, was the basis for a discussion of the pre-shipment testing Program by Mr. P. E. Grigg, Ceramic Specialist, Association of American Railroads.

Japanese Firm To Study NST Program - The Safe Transit Committee has sent to the Nippon Packing Co., Ltd., Tokyo, Japan, full information on the Safe Transit Test Procedures and the correlation work upon which the tests are based. The material was sent in response to a letter which said, "They say it is impossible to reduce the uncalculable losses and damage caused by poor packing as well as rough handling - especially in the Orient, but we have read about the Program that you have so admirably established and we want to try to develop a similar plan for the Japanese transit field."

Plans Progress For Establishment of NST Program in Canada - Plans for the establishment of a Canadian Chapter of the NST Committee are progressing rapidly and a full report on this important project will be issued shortly.



Custom Protection
FOR YOUR
WASHING MACHINE



Handling shocks are resisted by the wood cleats, glued tube mat construction.

WATKINS has the container for your shipping problem

Watkins Containers provide—stacking strength—ease of assembly—minimum shipping weight, thus reduced shipping costs—smooth staple-free interiors—easy handling—minimum of storage space needed—protection from dust and dirt—resistance to “weaving” and shock—“Traveling Billboard” feature for product identification and advertising.

For home appliances, for *all* types of finished products, the Watkins Container is your best insurance for safe delivery. Ship your carefully manufactured products safely and economically—ship them the “WatkinsWay.”

these companies build WATKINS containers

Cornell Paperboard Products Co. 1514 E. Thomas Ave., Milwaukee, Wis.
Coxier Container Corp. 446 East 131st Street, Cleveland, Ohio
Crate-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc. 10901 Russell Street, Oakland, California
Dura-Crates, Inc. 940 East Michigan Street, Indianapolis, Indiana
General Box Co. 1825 Miner St., Des Plaines, Illinois, and
16th and Maple Sts., Louisville, Kentucky
Hemb & Martin Mfg. Co. P.O. Box 108, Murfreesboro, Tennessee
Illinois Box & Crate Co. 811 Center Street, Plainfield, Illinois

Kieckhefer Box & Lumber Co. 1715 West Canal Street, Milwaukee, Wis.
Lane Container Corp. 10212 Denton Road, Dallas, Texas
Lewisburg Container Co. 243 Singer Street, Lewisburg, Pa.
Livingston Wood Manufacturing, Ltd. Tillsonburg, Ontario, Canada
Love Mfg., Inc. 608 South Commerce Street, Wichita, Kansas
Pennsylvania Box & Lumber Co. 2331 N. Bodine St., Philadelphia 32, Pa.
Utility Crate Corporation 1985 E. 16th Street, Los Angeles 21, California

—an inquiry to any of these companies will get prompt attention



The • WATKINS CONTAINER • Manufacturers

New

Supplies and Equipment

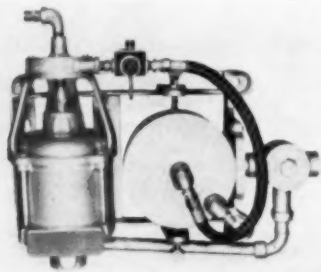
E-10. Line of finned electrical heaters

New Designated the "Slim-fin", these heaters are made by brazing spirally-wound steel fins to a standard rod-type heating element. The heaters are formed to shape before the fins are attached, permitting much greater flexibility and compactness in the design of such heaters. Optional spacing of the fins, from four to eleven to the inch, is another feature which should appeal to product designers and users.

Slim-fin heaters are made with .312 tubing and 15/16" fins and may be used for all types of convection heating. Capacities range from 500 to 2,000 watts. A companion line of "Heavy-duty" heaters is made with .540 tubing and 1-15/16" fins and is especially suited for forced-air convection heating. Capacities range from 1,000 to 10,000 watts, and these units can be used for 480-volt operation, directly or in series.

E-11. Hot spray heater

New Paint department bottle-necks are said to be eliminated with the introduction of uniform viscosity and controlled



temperature application of the newest hot spray heater. Standard industrial finishes can be expected to give better coverage and more mileage when used with the new, coilless Circaflo 300. This new unit combines the advantages of a coilless heat exchanger and the newly improved Circaflo pump. The Circaflo pump has no

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

bearings or close fitting tolerances to wear and is equipped with the higher powered 1/4 h.p. explosion proof, electric motor. One coat of heat reduced, high solids film replaces two coats, for a faster sag-proof application.

E-12. One hand label dispenser

New A squeeze of the trigger on the compact, light-weight unit cuts and attaches a self-adhesive paper label. The size of labels dispensed are either 3/4" x 1 1/8" or 3/4" x 5/8" and can be written on with pen, pencil or crayon. Two models are available, the T-2 which dispenses blank labels, and the T-3 which automatically prints labels as they are applied. The printing model is equipped with a removable snap-on chase which permits simple changes of type for marking, pricing, etc.

E-13. Magnetic back gauge

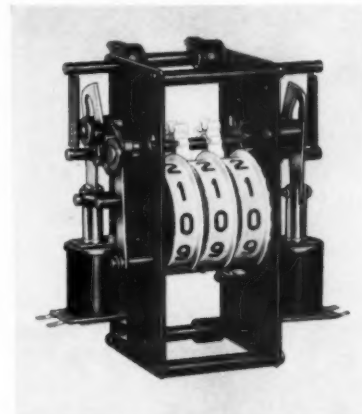
New Finger and hand injuries from press brake accidents are practically eliminated as a result of the new Electro-Magnetic Back Gauge safety device which has been developed. The attachment positions the work correctly at all times thereby increasing production and eliminating mistakes and spoilage. The AAC Magnetic Back Gauge is easy to install and operate and can be readily adapted for use on power presses, rolls, etc.

The AAC Gauge holds material while the ram is in motion enabling the operator to keep his hands clear of it — especially important when small sections or pieces are formed.

The operator does not have to "feel" whether the sheet is against the back stop since it is magnetically drawn to it. The new unit permits one man to handle large sheets easily and safely where two men are normally required. In many cases even unskilled labor can be used.

E-14. Counter subtracts as well as counts

New A new type counter, which not only adds but subtracts, makes it practicable for many operations including those that require the maintaining of a set capacity, such as controlling flow of materials to machinery or conveyors, production and inventory, and control of physical capacity in areas.

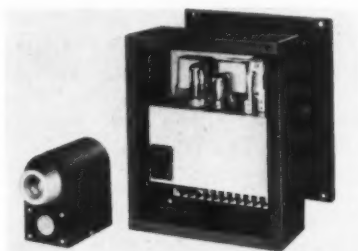


This counter will count or subtract at a rate of 400 counts per minute, up or down, in any sequence, one count per impulse, maximum 999. It can be set at a predetermined figure to automatically shut off at zero. Special counter can be furnished to requirements.

E-15. Registration control

New Photoswitch control type 23LF3 model 1006 makes available to industry a registration control which operates continuously over both high and low speed ranges

without special attachments. Designed for maintaining precise accuracy in automatic machine operations on plastics, tin, steel or other sheet material, this control responds instantly to the appearance of a mark printed on material moving past at speeds from 15 ft. per minute to more



than 500 ft. per minute. The abrupt change in light intensity caused by the passage of this mark actuates the control relay which will trigger speed correction devices, keeping the material in perfect synchronization with the machine operation. This eliminates spoilage, improves product appearance, and increases production.

E-16. Epon resin curing agent

New

A new modified amine curing agent has been announced. Development work has shown it particularly useful in epoxy castings, potting and adhesives and laminating applications where room temperature or moderately elevated temperatures of curing are desired.

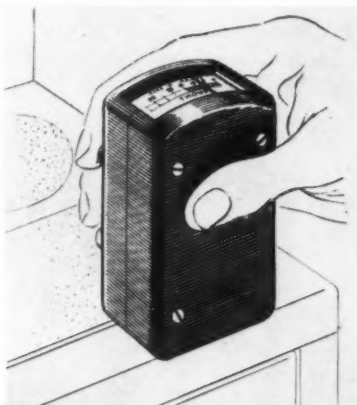
This new curing agent is expected to find widest usage with the lower molecular weight resins. In all applications the low vapor pressure minimizes the odor associated with unmodified polyamines.

E-17. Pocket thickness gauge

New

An accurate miniature thickness gauge is now available, which measures vitreous enamel coatings. The gauge, which is a single probe type, enables thickness measurements on most curved as well as flat surfaces with greater ease than formerly possible. It will show the measurement of thickness of non-ferrous layers on cast, wrought, forges or sheet iron and steel bases

of permeabilities between 200 and 3000. It can be used on iron or steel castings, strips, rod or tube, and flat or curved sheets.

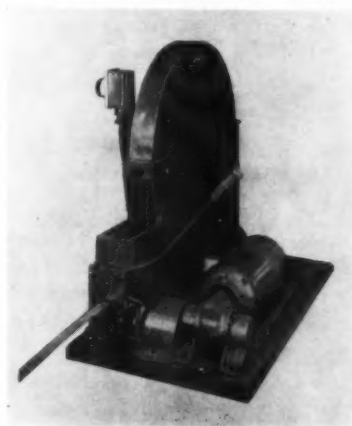


The instrument is provided with a zero adjuster and locking nut which enable the zero to be set to suit the base when measuring the thickness of the coating. The adjuster is provided to allow for variations in size, thickness and permeability of the bases.

E-18. Power coil dispenser

New

This is a new electrically-operated steel strapping dispenser for rapid banding of shipments. It is equipped with a magnetic brake for instantaneous stopping and



to prevent overruns. Available with or without shear, depending upon whether you need cut lengths or continuous strapping, this push-button dispenser is designed in three models to handle full coils of 3/4", 1 1/4" and 2" steel banding and will dispense at the rate of 250 ft. per minute.

E-19. Small rotary shear for precision trimming

New

A new, low cost rotary shear called the Toolmaster has been announced. Hand operated, it provides sufficient mechanical advantage to cut steel (other than stainless) as heavy as 16 gauge without undue effort and will handle even heavier gauges of aluminum or brass.



Other advantages claimed over ordinary hand shears are a cleaner, straighter cut, plus positive adjustment for width of cut — from 2" maximum down to a trim as fine as .005". Also, the Toolmaster can be bolted to a bench or truck, thus cannot be lost or misappropriated. Cutting wheels of the Toolmaster are said to outlast several pairs of hand shears without sharpening.

E-20. Electric heating unit for appliances

New

A new type of electric-heating unit for the appliance and equipment market has been developed. Originally developed for use in electric ranges, it is claimed to have application on many other products, ranging from clothes dryers and room conditioners to space heaters and industrial ovens.

The new heater uses a continuous steel reflector attached on one side of the open-type element to direct heat where it is wanted. The units bake more uniformly, and with far less wattage than conventional units.

New Industrial Literature

501. "Keep Operating Costs Down . . . When Temperatures Go Up"

New Are you having trouble with drop rods, burning tools and furnace parts? If heat and corrosion are creating problems with items of this type, write for this free booklet.

502. Timer bulletin SL-2

New This bulletin SL-2 provides complete information on this company's line of timers. Complete data, drawings and their "Timer Cycle Analysis Form" are included in the bulletin.

503. New polishing wheel

New A new line of standardized polishing wheels that permit high speed polishing with an extra margin of safety has been announced. The line includes four types of rubber bonded wheels to meet a wide range of polishing jobs on metal, wood, plastics and glass. All these wheels are self-dressing and non-loading. They may be shaped for polishing irregular surfaces and contours. Write for bulletin No. 103.

504. New line of filters

New These new units can be used for filtering a wide variety of liquids including engine lube and fuel oils, metalworking oils and coolants, and parts washing solutions. Nine different sizes are available using one to 36 cartridges. Flow rates range from 25 to 900 GPM. Pressure drop across unit is 4 PSI on oil of 170 SUS operating viscosity.

Extra-large dirt holding capacity is obtained by new cartridge designed especially for this filter. Resin-impregnated pleated paper in cartridge has 44 square feet of filtering surface. Filter element in cartridge is completely inert and will not remove

additives found in many oils. It will not soften or disintegrate when used on coolants or other liquids having a water base.



All models feature quick opening covers for convenience in changing cartridges. Covers are fastened by swing bolts which one man can loosen quickly. Large models have unique lifting device that swings cover to one side for easy access to cartridge. Write for equipment bulletin 101.

505. New fastener booklet

New The story of an ingenious fastener which is indispensable in aircraft manufacture and has been adapted for commercial use generally is told in a new booklet. This new literature describes how the TC Ribet can be used for quick, secure and economical fastening in appliances, awnings, automobiles, buses, cabinets, furnaces, signs, trailers, trucks, TV and radio sets, etc.

They are installed by one man from one side of the work without any bucking, hammering, twisting or exploding. They are set by a special gun which pulls the stem into the hollow shank, upsets a head on the blind

side, and fills the hole in the work — all in a split second. The result is lower unit cost, reduced assembly time and better product design.

The new book, attractively printed in two colors, is profusely illustrated to show how the blind rivets work and how they are being used in manufacturing, maintenance and repair work.

506. Line of plastic shelf supports shown in catalog

New An illustrated catalog showing a complete line of "Plasti-Supports" is available. These plastic shelf supports for refrigerators, freezers and cabinets are non-corrosive, one piece units. They completely eliminate the possibility of chipping or cracking of porcelain and permit "blind" assembly. Each style of "Plasti-Support" is illustrated with a photograph and a cross-section diagram — and complete specifications of sizes are included.

507. Brochure on electrical tapes

New The profusely illustrated brochure describes the old method of tape application which required a heat curing tape for baking purposes, and a different self-sticking tape for holding and insulating purposes. It then compares the old method to the new, in which one tape can function in both applications, since these 2 in 1 electrical tapes are both heat curing and self-sticking.

The booklet goes on to say that in addition to sticking at a touch, baking or high operating temperatures will strengthen rather than soften the adhesive of the 2 in 1 tapes. Advantages accruing from use of any of the 14 different 2 in 1 electrical tapes are: simplified inventory, fewer rejections and greater safety factor.

In addition, the brochure supplies a complete table of technical data, illustrating the curing cycle, tensile strength and seven other pertinent factors relating to the backing of these tapes which are composed of various materials ranging from glass cloth to crepe paper.

508. Bulletin 10-5 on cabinet ovens

New Illustrated and described are a wide range of standard cabinet ovens for use with gas, electric or steam heat involving temperatures up to 600 degrees. Structural features, dimensional and capacity data are also included.

509. Double horizontal disc grinders

New The well illustrated 16-page catalog contains application and construction information on this new line of double horizontal disc grinders in sizes ranging from 3 to 50 H.P., which use disc wheels ranging from 12 to 72 inches in diameter.

Also detailed for use with these grinders are work feed fixtures of the following types: reciprocating, oscillating, rotary and through-feed. Specific applications of the standard grinder units as adapted to specific grinding jobs are presented together with performance data.

510. Catalog describes small parts handling line

New A new eight-page two-color catalog DN-1000, covering all products in the NesTier line of small parts handling equipment is available. Ample illustrated with installation photographs, the brochure also shows how an integrated, plant-wide parts handling system can be custom tailored to individual requirements using standard stocked units.

It describes and gives specifications for nesting-stacking boxes and baskets, rollover hoppers, hopper rack assemblies and shelf racks. Used singly or in combinations, these versatile units are designed to eliminate re-handling, simplify parts control, expedite workplace supply and recover lost floor space for productive use.

511. Condensers shown in new catalog

New A new design in evaporative condensers is explained with a cut-away illustration and full

construction details. The new line, with capacities ranging from 10 through 150 tons at 78 degrees wet bulb, features a new external sump and flushtype, antisplash air inlet. Sump has been located outside the unit for easy servicing — contains water treatment basket, sediment screen and an automatic waste-drain-and-overflow, all reached by simply lifting a cover. All sections of the unit are formed of steel and hot-dip galvanized after fabrication for maximum protection against rust. Centrifugal blowers to induce a quiet, constant velocity air stream, with or without ducts, and all-prime-surface refrigerant coils are incorporated in the new line. Included in the catalog are performance curves for selecting units to use with either freon or ammonia.

512. Furnace and oven control catalog

New A new edition of the price list and specification catalog for furnace and oven control instruments and accessories has just been released. Containing detailed specifications and engineering data necessary for choosing the proper pyrometers and control equipment for heat-treating, metal processing or other industrial heating application, the bulletin describes and illustrates all components required in such a system, including electric control relays, motor operators and controllers, and electric and air-operated control valves. All essential accessories are

also included. The 48 page bulletin P1260 contains over 100 illustrations.

513. How to cut masking costs

New A new 6-page illustrated bulletin giving many practical suggestions on how to save time and cut costs in spray painting and other metal finishing where masking is necessary is available. The bulletin #160-C, describes in detail actual case histories with photographs of production and other applications using pre-cut protective masks.



The applications shown include paint spraying, flow coating, dipping, brushing; anodizing and plating; machining; sandblasting and tumbling. Also sealing and protecting products, parts and assemblies during processing, handling, storage and shipment to keep them free from dirt, dust, moisture, scratching, etc. Write for free bulletins and actual testing samples.

FINISH
York Street at Park Avenue
Elmhurst, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No. _____ No. _____ No. _____ No. _____

No. _____ No. _____ No. _____ No. _____

Name _____ Title _____

Company _____

Company Address _____

City _____ Zone _____ State _____

ADVERTISERS' INDEX

PAGE	PAGE
ACKERMANN MANUFACTURING...11	MILLS PRODUCTS, INC.....24
ACME STEEL COMPANY.....ST-9	MONARCH ALUMINUM MFG. CO..64
ALLOY RING SERVICE, INC.....89	MEYERCORD COMPANY, THE...94
AMERICAN DECORATING CO..47, 48	NEW MONARCH MACHINE AND STAMPING COMPANY...82
AMERICAN NICKELOID CO.....19	NEW PROCESS D-ENAMELING CORPORATION.....70
ARK-LESS SWITCH CORP.....38	NEWCOMB-DETROIT.....38
ARMCO STEEL CORPORATION.....1	NORTHWEST CHEMICAL CO.....26
BIGELOW-GARVEY LUMBER CO..ST-8	PEMCO CORPORATION.....80
BINKS MANUFACTURING CO...101	PENNSYLVANIA SALT MFG. CO..16
BURDETT MANUFACTURING CO..18	PERMACEL TAPE CORPORATION..12
CENTURY VITREOUS ENAMEL CO..85	PITTSBURGH PLATE GLASS COMPANY.....3rd COVER
CHICAGO MILL & LUMBER CO..ST-4	PORCELAIN ENAMEL INSTITUTE..87
CHICAGO VITREOUS CORP.....67	PYRAMID MOULDINGS, INC.....95
CIRCLE F MANUFACTURING CO..89	RANSBURG ELECTRO-COATING CORPORATION.....23
COLUMBIA-GENEVA STEEL DIV. UNITED STATES STEEL CORP...9	RATHBORNE, HAIR & RIDGWAY BOX COMPANY.....ST-2
CUYAHOGA SPRING COMPANY..94	SHELL CHEMICAL CORPORATION..42
DANIELSON MFG. CO., V. W....35	ROBERTSHAW-FULTON CONTROLS COMPANY.....40
DOW CORNING CORPORATION..93	SHERWIN-WILLIAMS CO., THE...17
DU PONT DE NEMOURS & COMPANY, INC., E. I.....56	SORENG PRODUCTS CORP.....34
FAHRALLOY COMPANY, THE.....4	SOUTHERN SCREW COMPANY...21
FERRO CORPORATION 6, 8, 20, 74, 75, 90, 91, 100, 104	SPEE-FLO COMPANY, THE.....39
FERRO ELECTRIC PRODUCTS, INC..2	SPRA-CON COMPANY, THE..72 & 73
FERROD MANUFACTURING CO..22	STEVENSON COMPANY, THE....84
FINISH.....96 & 97	STRUTHERS WELLS CORP.....55
FOOTE MINERAL CO.....78 & 79	TENNESSEE COAL & IRON DIV. UNITED STATES STEEL CORP...9
FOSTORIA PRESSED STEEL CORPORATION.....77	TITANIUM PIGMENT CORP.....61
GRIP NUT COMPANY.....38	TUTTLE & KIFT, INC.....4th COVER
HOMMEL COMPANY, THE O....83	UNION STEEL PRODUCTS CO....7
HOWARD INDUSTRIES, INC.....30	UNITED STATES STEEL CORP.....9
HUYCK CONSTRUCTION CO....86	UNITED STATES STEEL EXPORT COMPANY.....9
INGRAM-RICHARDSON, INC.2nd COVER	WATKINS CONTAINER MFRS...ST-11
JENSEN SPECIALTIES, INC.....10	WEAN EQUIPMENT CORP.....69
KING-SEELEY CORPORATION...76	WHEELING STEEL CORP.....25
LUX CLOCK MFG. CO., THE.....5	YOUNGSTOWN SHEET & TUBE COMPANY.....29
MACCO PRODUCTS COMPANY...99	
MARSCO MANUFACTURING CO..14	
McDANIEL REFRACTORY PORCELAIN COMPANY.....44	

Customer Service YORK ST. AT PARK AVE., ELMHURST, ILLINOIS

"I saw your ad in finish"

WANTED — Young man with enameled experience interested in training for customer contact work. State experience and salary requirements.

Address reply to Box 555, c/o finish, York St. at Park Ave., Elmhurst, Ill.

SERVEL NAMES SMITH

HEAD OF PURCHASING

Walter A. Smith has been appointed director of purchasing for Servel, Inc., Evansville, Ind., it was announced by John H. Wall, vice president and general manager of the home appliance division.

Smith was formerly assistant purchasing agent of Seeger Refrigerator Co. He succeeds S. L. Nicholson, who resigned to enter business as a manufacturer's agent.

FLORENCE STOVE NAMES

REEVES VICE PRESIDENT

H. M. Reeves, Sr. has been appointed vice president of Florence Stove Co., Chicago, it was announced by J. P. Wright, chairman.

Reeves has been director of product engineering for all Florence plants since 1950. He will continue to supervise product engineering activities, including a new research and development department located in Chicago.

STEWART-WARNER '54 INCOME

Net income of \$2,757,000 for 1954 has been reported by James S. Knowlson, board chairman, and Bennett Archambault, president, Stewart-Warner Corp., Chicago.

GAR WOOD NAMES DAVIES

Walter C. Robertson, vice president, Gar Wood Industries, Inc., New York, has announced the appointment of William L. Davies as his assistant. Davies will make his headquarters in Washington, D.C.

BENDIX NAMES MCWETHY

An expansion of home laundry research engineering was revealed with the announcement of the appointment of I. E. McWethy as laundry research engineer, Bendix Home Appliances Div., Avco Mfg. Corp.

MAY • 1955 finish